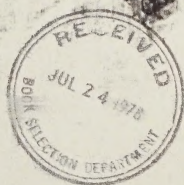



Kakabeka Falls Provincial Park

CAZON
NR
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Master Plan



Ministry of
Natural
Resources



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Kakabeka Falls
Provincial Park

Master Plan



MINISTER'S APPROVAL STATEMENT

Kakabeka Falls Provincial Park, established in 1957, has long been famous for its waterfalls of the same name. In accordance with the master plan, improved opportunities for viewing the falls and the adjacent gorge will be provided. The facilities will be complemented by the visitor services program developed to stress the full interpretation of the park's outstanding natural and cultural resources to the park user. In addition, throughout the southern sector of the park, there will be increased provision for high quality, year-round recreational experiences associated with a network of trails. Recreational opportunities, such as picnicking, swimming and car-camping, traditionally available at Kakabeka Falls, will be retained. Moreover, in response to a demonstrated demand, car-camping opportunities will be increased substantially.

Reflecting the emphasis on resource preservation, viewing and interpretation, Kakabeka Falls Provincial Park will remain classified as a natural environment park. The park goal, objectives, zoning, resource management policies and facility development guidelines have all been established to ensure that the recreational opportunities are compatible with the resource values identified within the park.

This master plan, approved in accordance with The Provincial Parks Act, Section 1d and Section 7A, provides the official policy for the preservation, further development and management of Kakabeka Falls Provincial Park. With its implementation, I am confident that Kakabeka Falls will gain a reputation as one of Ontario's most important natural environment parks.

My gratitude is extended to the general public and interest groups who provided input during the preparation of the master plan. The Ministry looks forward to continued public involvement in the future.

A handwritten signature in dark ink, appearing to read "F. Miller".

Hon. Frank S. Miller
Minister

March, 1978

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Metric Measures

<u>Unit</u>	<u>Equivalent</u>
centimetre (cm)	0.3937 inches
metre (m)	3.2808 feet
kilometre (km)	0.6214 miles
square kilometre (sq km)	0.3861 square miles; 100 ha
hectare (ha)	2.4710 acrea
cubic metre (cu m)	35.3148 cubic feet
litre (l)	0.2200 gallons
kilogram (kg)	2.2046 pounds
kilowatt (kw)	1.3410 horsepower
degrees celsius ($^{\circ}$ C)	$^{\circ}$ C $\times \frac{9}{5} + 32 =$ degrees Fahrenheit ($^{\circ}$ F)

Master Plan Highlights

Kakabeka Falls Provincial Park is classified and managed as a natural environment park in accordance with the Ontario Provincial Parks Classification System.

To achieve the park's preservation and recreation objectives, four zone designations are employed: nature reserve, natural environment, historical and development.

Park programs and facilities are to be re-oriented to emphasize the viewing, interpretation and educational opportunities particularly in the immediate vicinity of the falls.

A visitor services centre is to be constructed adjacent to the falls viewing area.

A free day-use policy is to be implemented to facilitate visitor access to and circulation within the falls viewing area.

In response to demonstrated demand, 170 additional campsites are to be developed adjacent to the existing upper campground.

The upper campground is to be expanded and, after monitoring day-user demands, careful consideration will be given to the conversion of a portion of the lower campground into a picnicking area.

A group campground to be located in the park's southwestern corner will provide additional camping opportunities particularly to educational groups.

A trails system is planned to provide access to quality viewing, interpretive and educational resources in the southern sector of the park.

Winter recreational use is encouraged through the provision of opportunities for cross-country skiing and snowshoeing.

The plan proposes an expansion of the park to the south to incorporate significant earth science features and to provide additional opportunities for interpretation, education, viewing, hiking and group camping.

Land-use zoning, complementary to the park's objectives, is proposed for the areas surrounding the park.

In accordance with The Provincial Parks Act, the master plan will be reviewed every five years and will be completed as funds and priorities permit.

Introduction

Kakabeka Falls Provincial Park, located some 32 km west of Thunder Bay on the Kaministiquia River, contains the waterfall for which it was named (Figure 1). The word "Kakabeka" is derived from an Ojibwa word meaning "thundering water". Kakabeka Falls is one of Northern Ontario's most outstanding and widely known natural features. Associated with the waterfall, but more generally with the Kaministiquia River, is a rich cultural history. The river was historically utilized as an important water corridor linking Lake Superior to the west. Kakabeka Falls represented one of the most formidable obstacles to travel along this route.

The park was established in 1957 and since 1967 has been classified as a natural environment park. Today, it occupies an area of 420 ha and provides opportunities for scenic viewing, camping, swimming and picnicking in the summer and cross-country skiing, snowshoeing and viewing in winter. In recent years, visitation has ranged from 300,000 to 400,000 annually, with most visitors entering the park for the single purpose of viewing the falls.

Highway 11-17, a segment of the Trans Canada, passes directly through the park's developed sectors and provides convenient access for the two principle user groups. The users include highway travellers who may stop briefly to view the falls or camp overnight and the Thunder Bay area residents who may travel to the park on a summer weekend to view the falls, picnic or swim.

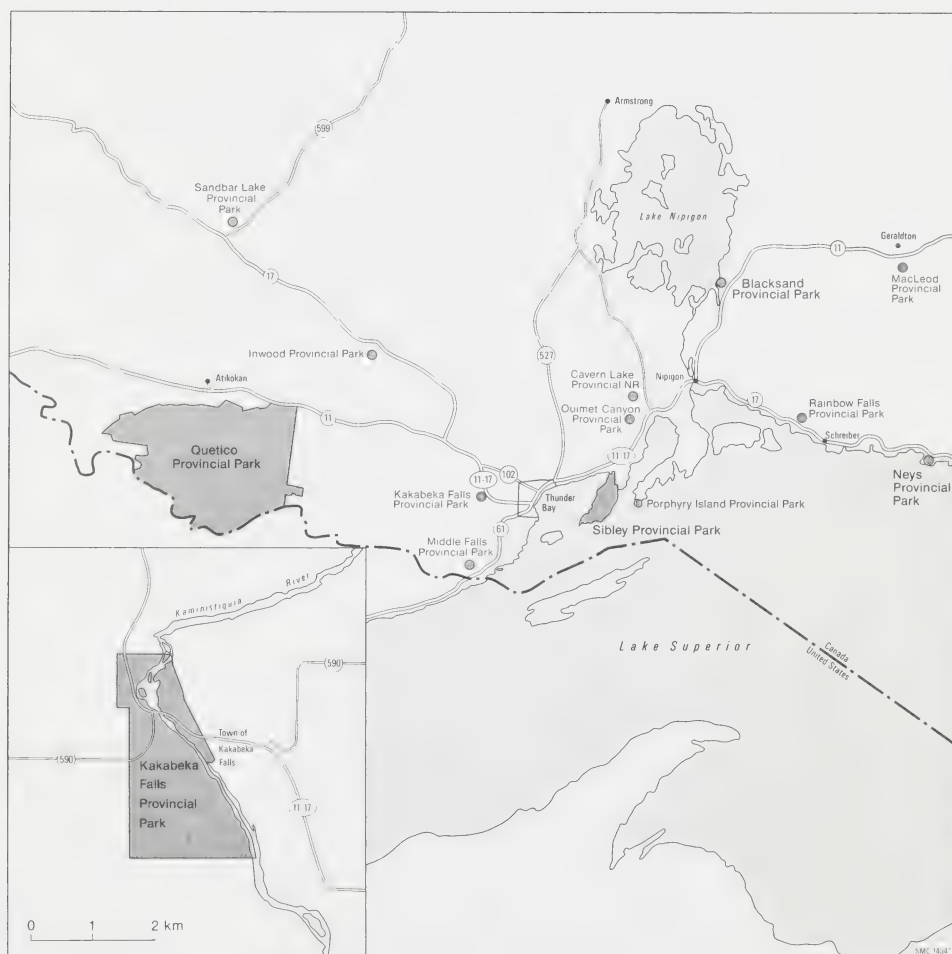
The park is directly accessible to the community of Kakabeka Falls which abuts its boundary. Although readily accessible via Highway 11-17, because of the park's proximity, residents may easily walk from the town to use the day-use facilities. Currently, a walkway is under construction to facilitate pedestrian access.

Figure 1

Regional Setting

Provincial park

Provincial park or nature reserve (NR)



0 10 20 40 80 km



The Planning Problem

The problem addressed by the Kakabeka Falls master planning exercise is a practical one. To date, the park has provided opportunities for such traditional outdoor recreational opportunities as viewing, swimming, picnicking and car-camping. Its popularity in supplying these opportunities is evidenced by current levels of use, which are among the highest of Northwestern Ontario's provincial parks. Pressures on existing facilities, most notably the car-campground, argue strongly for expansion. Unfortunately, however, while some expansion of these opportunities is possible, environmental and site design constraints impose substantial restrictions on the degree of expansion that reasonably can be achieved. On the other hand, the park's biophysical and cultural resource base, containing elements of provincial, national and even international interest, possesses an outstanding potential for viewing, interpretation and education. However, with the exception of viewing in the immediate vicinity of the falls, these potentials have not yet been realized.

The problem then, is to define, in rather precise terms, the future role of Kakabeka Falls Provincial Park. This task, although purposeful and straightforward, is not easily accomplished. It involves the rather careful weighting of traditional patterns of recreational use against truly outstanding, but previously undeveloped, resource potentials. The challenge is to broaden park opportunities by emphasizing those directly dependent upon the quality of its natural and cultural resources while retaining traditional recreational opportunities and ensuring that the integrity of the resource base is maintained.

To resolve the problem a comprehensive park management policy or master plan is required. The policies contained in the master plan are derived from an evaluation of the potential of the park's resource base and the needs or demands of its existing and potential users. Ultimately, it is the master plan that establishes how the park will be managed, as a provincial park, to achieve an optimal level of user experience while maintaining the integrity of the park's biophysical and cultural resources.

Biophysical Resources

A study of park resources logically begins with the natural environment or the biophysical base upon which all components of the park ultimately depend. The inherent values of the park's resource base initially attract the attention of recreationists, warrant preservation and represent the capability of the site to support recreational use and associated development. In effect, the park's natural environment dictates its potential contribution to the objectives of the Ontario Provincial Park System.

Climate

The climate associated with the Kakabeka Falls area, namely long cold winters and short warm summers, is classified as modified continental because of the presence of Lake Superior (Chapman and Thomas, 1968). The temperature extremes, typical of the true continental climate, are moderated by the lake with the degree of moderation generally diminishing as the distance from the lake increases. To illustrate the moderating effect, mean summer temperatures at Thunder Bay, only 32 km east of Kakabeka Falls and on Lake Superior, are approximately 1°C less than those at the park. Lake Superior's moderating influence at the park is greatest in May and June when cool onshore winds blowing off the lake are funnelled up the Kaministiquia Valley and depress the rising spring temperatures in their path. Throughout the remaining months the winds are from the west. The yearly average temperature at Kakabeka Falls is 2.6°C with average temperatures of 14.9°C in June, 18.2°C in July and 17.0°C in August.

Since figures representing rainfall and the percentage of sunshine are not available for Kakabeka Falls, those for the nearest weather station, Thunder Bay, are utilized. Therefore, bearing in mind the climatic variations between Thunder Bay and Kakabeka Falls as noted in the preceding paragraph, the following figures may only be considered to approximate the situation at the park. The average yearly rainfall total is 53 cm, with 8.8 cm falling in June, 7.6 cm in July and 9.0 cm in August. The months of June, July and August have bright sunshine 54, 62 and 57 percent of total daylight hours, respectively.

The park experiences a variety of microclimates primarily because of the variations in relief. Perhaps the most noticeable is the coolness of the gorge, a result of the shading effect created by the steep walls and its wind funneling effect. The slopes in the park, depending on their orientation to the sun's rays, provide relatively warm or cool areas. Finally, the upper campground flatland and the granitic outcrop, as a result of their exposure to the summer sun and their physical composition, are particularly warm areas in summer.

Geology

The park lies within the vast Precambrian Shield, a complex of ancient sedimentary, igneous and metamorphic rocks extending from the far Arctic to south of the Great Lakes. The Shield is divided into a number of provinces and sub-provinces on the basis of overall differences in internal structural trends and style of folding (Stockwell et al, 1970). Kakabeka Falls Provincial Park is situated on the boundary between the Superior Structural Province and the Southern Structural Province.

The older rocks, belonging to the Superior Structural Province, are Archean-aged granitic intrusives, approximately 2,480 million years old. They underlie the northern portions of the park and consist primarily of quartz monzonite (Figure 2). Jointing, fracturing and faulting are common features of the bedrock and reflect regional structural trends. The low, rolling topography is typical of the Superior Structural Province and familiar to those who have travelled through Northern Ontario.

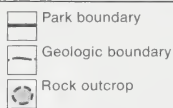
The remainder of the park is underlain by sedimentary and volcanic rocks (shale, chert-carbonate, siltstone and mud-ball tuff) of the Gunflint Formation of the Southern Structural Province. These were deposited on the bottom of an inland sea during Middle Precambrian or Proterozoic time approximately 1,600 million years ago (Franklin, 1970). Kakabeka conglomerate, the basal member of the Gunflint Formation, occurs in the park at the following localities: immediately south of the Archean-Proterozoic boundary north of Highway 11-17 and at a rock cut at the junction of Highway 11-17 and Highway 590 (Figure 2). Resting in fault-contact with the Archean granitic rocks, the Kakabeka conglomerate consists of pebbles of vein quartz, jasper, Archean iron formation, volcanic rock and granitic rock in a matrix of quartz and chlorite.

South of the Highway 11-17 bridge over the Kaministiquia River, the sedimentary and volcanic rocks of the Gunflint Formation are exposed in the river channel, particularly in the gorge south of Kakabeka Falls. Here a 41 m section exposes flat-lying shales and tuffs of the Upper Tuffaceous Shale submember of the Gunflint Formation underlain and capped by thin, resistant layers of chert-carbonate. Kakabeka Falls is a typical example of a waterfall that has developed along a river's course where easily-eroded rocks are overlain by a capping of hard resistant material (Pye, 1969). The Upper Tuffaceous Shale is an extensive marker horizon used for correlation purposes within the Gunflint Formation in the Lakehead area and attains its maximum thickness at Kakabeka Falls.

Within the lower algal chert submember, microfossils of very primitive forms of life have been found. Believed to be over 1,600 million years old, these microfossils are predated only by one discovery of older microfossils in South Africa (Barghoorn, 1971).

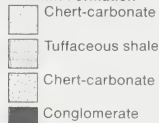
Figure 2

Geology



Middle Precambrian (Proterozoic)

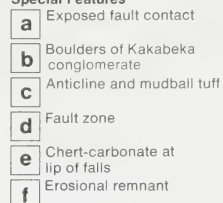
Gunflint Formation



Early Precambrian (Archean)



Special Features



Geomorphology and Soils

The most spectacular feature in the area, Kakabeka Falls, was the reason for the establishment of the provincial park. It is interesting from a geological, historical and scenic point of view. The waterfall reflects the underlying bedrock. An erosion-resistant layer of chert-carbonate, approximately 0.6 m thick, forms the bed of the Kaministiquia River above the falls (Figure 3). This hard caprock prevents the active back-cutting of the more brittle, easily-eroded Upper Tuffaceous Shale sub-member of the Gunflint Formation which lies beneath. However, it is believed a fault in the chert-carbonate may have been subjected to alternate freezing and thawing by glacial conditions exposing and weakening the surrounding rocks which were then subjected to erosion by glacial meltwater (Grootenboer, 1971). The turbulence of the falling water eroded the softer shales beneath, undercutting the hard caprock and causing heavy blocks, under their own weight, to break off and fall into the gorge. As a result, the waterfall slowly eroded upstream to its present position. The combination of the overlying hard caprock and the underlying soft shales maintains the vertical structure of the falls.

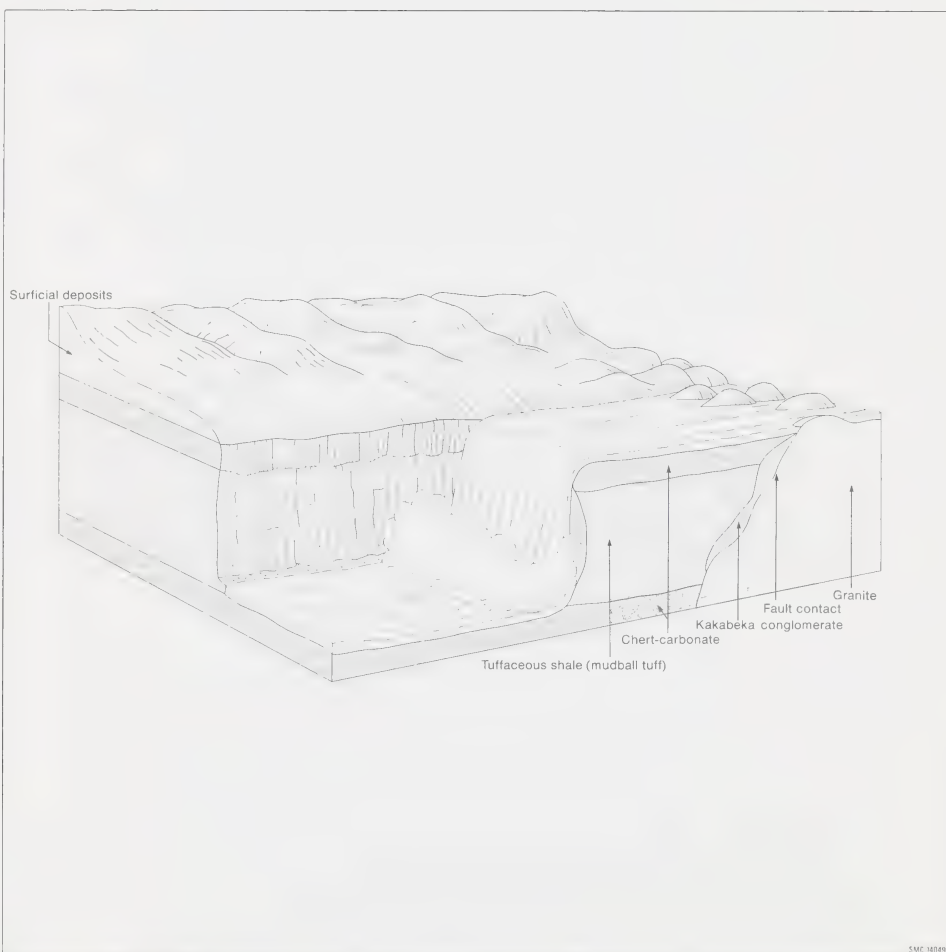
The gorge has been forming since the meltwaters of the spillway first acted upon it, about 10,000 years ago (Grootenboer, 1971). The initial waterfall was much wider by some several hundred metres as is indicated by the existence of broad semi-circular eastern and western gorges. Within the western gorge there is a resistant rock-island erosional remnant (Figure 4).

The formation of the gorge and Kakabeka Falls is an integral part of the deglaciation history of northwestern Ontario. The last advance of glacial ice into the park area came from the east (Zoltai, 1963). This ice lobe, called the Superior lobe, introduced the freeze-and-thaw conditions which possibly initiated the formation of the falls in the Kaministiquia spillway channel. The ice completely covered the park area, halted at the Marks moraine and merged with the advancing Hudson Bay lobe north of Thunder Bay. The co-existence of these two ice lobes dammed glacial Lake Kaministiquia north of the park area. Upon withdrawal of the Superior ice lobe from the park area, a thin mantle of clayey till was deposited. Water was ponded between high ground to the west and the retreating ice forming the upper levels of the post-Duluth glacial lake stage. Strandline features south of the park indicate that the shores of various stages of these post-Duluth Lake extended to the present position of Kakabeka Falls.

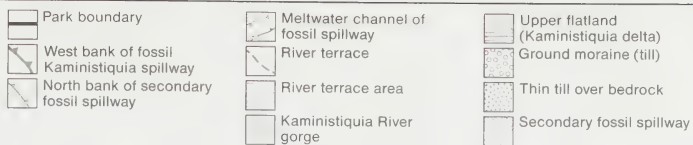
Glacial Lake Kaministiquia drained through the Kaministiquia spillway into a post-Duluth glacial lake called Lake Beaver Bay. The Kaministiquia spillway, in conjunction with the Kashabowie spillway north of Dog Lake, became major drainage channels for the melting Hudson Bay ice lobe, the more-westerly Patrician ice lobe and for the glacial lakes in the west including, for a time, Lake Agassiz. The large volumes of glacial meltwaters provided the force required to deepen the fractured zone in the Kaministiquia spillway bed thus forming the gorge and Kakabeka Falls (Grootenboer, 1971).

Figure 3

**Conceptual Block Diagram
of Kakabeka Falls**



Geomorphology



Sediments carried from glacial Lake Kaministiquia along the Kaministiquia spillway were deposited as a large delta into glacial Lake Beaver Bay roughly 11,000 years ago. The upper campground area of the park is situated on a remnant portion of the highest level of this delta near the mouth of the Kaministiquia spillway. As the continental glaciers retreated out of the region and the weight of the ice was removed, the land slowly rose by isostatic rebound. In the Superior basin, the resulting successively lowering lake levels caused the Kaministiquia spillway to cut through the deltaic deposits to bedrock, forming a series of river terraces. These terraces, consisting of small flat areas separated by steep, regular slopes ranging in height from one to 10 metres, are the dominant topographic features of the park between the river gorge and the upper flatland.

An ancient drainage channel traverses the southern section of the park and cuts across the river terraces described above (Figure 4). This feature is characterized by a sinuous depression approximately 450 m wide trending from the western boundary in an east-northeasterly direction to the edge of the gorge. Associated with it to the north and south is a hummocky terrain which is the result of bank erosion. The channel was formed during the latter stages of the dropping lake levels in this area. Waters from an unknown source cut through the river terraces in their course to the lake, washing the sand and silt banks of the delta deposit to form the hummocky, dissected terrain of its banks. Clay is common in and near the stream bed which presently occupies this drainage channel.









Hydrology

The park is situated on the Kaministiquia River which drains a watershed of approximately 4832 sq. km and flows into Lake Superior at the City of Thunder Bay (MacLaren, 1970). The western extremity of this watershed coincides with the western extremity of the watershed of the Great Lakes system.

Major lakes which feed the Kaministiquia River include Dog Lake, the river's source, and the Shebandowan Lakes which are drained via the Shebandowan River to intersect with the Kaministiquia River some 13 km north of the park. The discharge from these lakes is regulated by a series of control dams. The most important dam, in the context of the park, is situated just to the north of the park's boundary. Here impounded water is re-routed around the falls to a hydro generating station situated in the eastern gorge just outside the park's boundary. This facility has drastically modified the flow of water over the falls. Since the dam's development, high volume flows are generally restricted to periods of peak spring runoff when the flow of water exceeds the storage capacity of the reservoir. A maximum flow of 574 cu m per second (20,300 cfs) was recorded in June, 1947 (MacLaren, 1970). In recognition of the scenic recreational importance of the falls, Ontario Hydro permits a minimum flow over the falls of approximately 4 cu m per second (150 cfs) on weekdays and 8 cu m per second (300 cfs) on weekends during daylight hours.

Figure 5

Hydrology

- | | | |
|--|--|--|
|  Park boundary |  Infiltration area |  Wetlands |
|  Major break in slope |  Surface run-off |  Direction of internal drainage (suspected) |
| |  Infiltration and surface run-off |  Direction of surface drainage |



Little surface water is visible in the park owing to the porosity and depth of the surficial deposits which cover much of the area (Figure 5). The principle exceptions occur in low-lying areas where the percentage of fine-textured material is relatively high or where the presence of bedrock near the surface has resulted in an elevated water table.

Drainage associated with the relatively deep surficial west-central sector of the park tends to be internal. These waters drain either directly toward the river appearing as ground seepage at the contact made by the surficial deposits and the bedrock of the gorge, or indirectly to the river through low-lying areas which are ultimately emptied by short streams flowing directly into the river. The park's major stream of this later category has been impeded by beaver dams resulting in a series of small ponds in the southern sector. The outflow from the last of the beaver dams spills over the gorge wall as a picturesque waterfall.

In the bedrock area of the park's northern sector, the drainage is primarily runoff flowing overland directly to the river. Occasionally, water becomes trapped in bedrock depressions and does not readily drain away. These small pools generally evaporate during the hot summer months.

Vegetation

The park is located just within the northern limits of the Quetico Section of the Great Lakes-St. Lawrence Forest Region and borders on the southern boundary of the Superior Section of the Boreal Forest Region (Rowe, 1972). Consequently, the park's vegetation is transitional and partially representative of both forest regions.

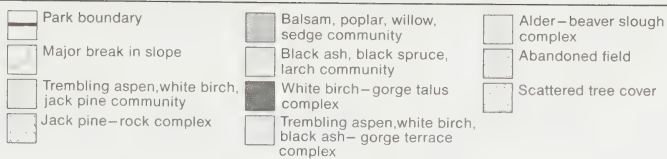
After the glaciers retreated, the general character of the soils and climate in this area favoured the development of pine communities characteristic of the Great Lakes-St. Lawrence Forest Region. However, the park now consists of trembling aspen, white birch and jack pine mixed with white spruce and balsam fir frequently occurring on slopes. Black spruce and birch are typical in low-lying areas. The prominence of these various boreal species are a result of relatively recent disturbances of logging, fire and agriculture. In addition, some black ash and American elm, typical of more southerly areas, are found in areas adjacent to the river's edge.

The upland vegetation covers most of the park and is predominantly an association of aspen, birch and jack pine (Figure 6). This association is characteristic of the sandy, silty glacio-fluvial soils. Particularly on the slopes, this predominate association is joined by scattered white spruce and balsam fir.

In the northern portion of the park, two wetland communities have developed. On the western bank of the river, north of the Highway 11-17 bridge, a narrow community of balsam poplar, willow and sedge has developed adjacent to the banks of a small westerly channel separated from the main river by an alluvial island. Although the

Figure 6

Vegetation



SMC 14051

0 100 250 500 1000 m



community occurs on the island, it is not as well developed there as on the western bank where a true seccessional profile is evident.

On the opposite side of the river, a black ash, black spruce and larch community has developed in a low and poorly drained area. A small portion of the interior of this community is dominated by alders. This area is situated immediately east of the picnicking area which, because it is an activity area subject to heavy use, has a scattered tree cover.

In the gorge, immediately downstream from the falls, talus slopes on both sides of the river support stands of white birch. On the eastern bank are stands of pure white birch with a few black ash and American elm growing along the river. On the eastern side of the gorge, the talus slope is narrow and not as well developed as that of the eastern side. In addition, it faces the northeast thus it has a somewhat colder microclimate than the eastern side. As a result, balsam fir and white spruce, in addition to white birch, constitute the major components of this community which includes some white cedar as well.

A lush growth of moss species has managed to gain a foothold on the vertical rock faces of the gorge where they are subject to spray from the falls. The lushness of this community is most apparant on the western wall of the gorge. Here also, because of the direction of the predominant winds and the configuration of the gorge itself, the moist spray of the falls is most evident.

A diverse vegetational complex occupies the floor of the western gorge. This complex is a reflection of the variety of soil moisture conditions found in this abandoned river channel. It is within the western gorge that the central erosional remnant exists. The depression surrounding this rock island or pillar supports a lush growth of aspen with the exception of a small pocket of white spruce, balsam fir and white cedar which occurs just to the west of the pillar. The rock pillar itself supports a stand of jack pine with a carpet of lichen and moss undergrowth. Poison ivy, at the northern limit of its range, occurs on the dry southerly talus slopes. South of the pillar, aspen again predominates but in association with white birch and black ash. This association occurs in small pure and mixed stands which extend southward along the river bank and terraces to the park boundary.

The southern sector of the park contains a series of abandoned farm fields. Here secondary succession occurs as aspen seedlings encroach from the surrounding forest. Just north of the abandoned fields, a small creek flows northeasterly to the river. This creek, whose flow is interrupted by a series of beaver dams, has repeatedly inundated the shallow surrounding valley which has resulted in the drowning of some scattered larch and black spruce as well as a few jack pine at the valley's edge. The present community occupying much of the creek valley consists of alders, sedges and grasses.

Wildlife

Although the wildlife of the park is typical of the Boreal Forest Region, the influence of man-altered environments on the representation of species in the park is also apparent. Mammals present in Kakabeka Falls Provincial Park include the black bear, moose, white-tailed deer, beaver, snowshoe hare, red fox, striped skunk and eastern chipmunk while timber wolves, woodland caribou and marten, characteristic of a boreal forest, are absent.

The birdlife of the park includes ruffed grouse, ravens and many species of wood warblers and thrushes. The park is also the habitat for birds more typical of semi-open country such as catbirds and brown thrashers.

A limited representation of reptiles and amphibians is to be expected in the relatively cold environment of the park. However, leopard frogs, boreal chorus frogs, spring peepers and the common toad can be heard singing in the cold ponds in the early spring. The eastern garter snake and the Jefferson's salamander are the only known representatives of reptiles to be found in the park.

To fish travelling up the Kaministiquia River, the falls represent an insurmountable obstacle. Consequently, species such as pickerel and rainbow trout sometimes concentrate in the river just below the falls which is favourable for anglers. On occasion, sturgeon have also been caught at the bottom of the falls.

Of all the wildlife species the beaver, the white-tailed deer and the snowshoe hare attract the most attention because they are the most noticeable to park visitors. A well-developed beaver colony is situated on the small creek which traverses the southern sector of the park. Here, many old and abandoned beaver dams and lodges can be observed and at least one lodge is presently active. Adjacent to the creek, many of the smaller aspens have been felled by the beaver in their search for building material and food. With the remaining supply of large aspen situated on steep slopes well removed from the water course, the existing habitat is becoming marginally capable of supporting the existing beaver population.

A second beaver community exists near the western bank of the Kaministiquia River near the southern boundary of the park. The most distinctive feature of this second community is the network of canals emanating from the pond containing an active lodge. It is believed that this family of beavers originated in the beaver ponds above the gorge and, as a result of overpopulation in the original area, have emigrated to their present location.

Although Kakabeka Falls is at the northern fringe of their range, white-tailed deer are often sighted within the park. The mixture of farmland and forest within the park and its vicinity provides a suitable habitat for the deer. Shy and evasive animals, deer can easily avoid being seen during the summer months even when

they are abundant in populated areas. However, in winter, their tracks, bedding areas and droppings are readily observed in the snow. Although observed throughout the park, they prefer the jack pine, birch and aspen community of the upper campground flatland and the western gorge areas where they concentrate in the winter months.

Snowshoe hare are very common but are not frequently seen. These nocturnal animals are most common where beaver cuttings and fallen trees have provided them with a good supply of twigs and bark. In winter, their tracks may also be frequently observed in the snow throughout the park.

Man and the Parkland

Man's interaction with the natural resource base in the park area and his earliest known prehistoric occupancies began by at least 8,000 B.C. and, through time, have been increasingly noticeable up to the present recreational development. Considered in its cultural context, the parkland and, specifically, the falls represent resources ever-changing in response to man's technological capabilities of the time. These technological advances and man's activities have had increasing impacts upon the physical resource base. Therefore, an historical review of man's past association with the parkland serves to not only identify the significant cultural resources of the park but, also, to explain many of the present park features from an historical perspective.

The discussion on the land use and development within and adjacent to the park represents the product of man's past and present interaction with the parkland. This provides an understanding of the capability of the existing park facility infrastructure to satisfy existing and future demands. Such an inventory is also relevant when examining management options which may be substantially restricted by development which has already occurred.

Prehistory

By 8,300 B.C. the great Wisconsin glacial ice sheet had retreated from the Kakabeka area for the last time leaving the land open for human settlement (Prest, 1970). The meltwaters of the retreating glacier formed a lake which, at its greatest vertical extent, covered the southern portion of what is presently the park. Adjacent to its former shorelines, archaeologists have found a small number of stone flakes (DcJj-10) possibly associated with a hearth (Table 1). Although present evidence is inconclusive, this small archaeological deposit may represent evidence of Paleo-Indian occupation dating to the immediate post-glacial period. However, it may date from a later period of lower lake levels and consequently, bear no direct relationship to this early shoreline and may instead represent a later interior occupation possible associated with a large game kill site.

More definite evidence of any early local Palaeo-Indian occupation has been discovered just south of the park boundary. The site (DcJj-11) is believed to be situated on a former shoreline of glacial Lake Minong (Newton et al, 1974). Following the retreat of the continental ice sheet, Lake Minong was the first to fill the entire Superior basin and its waters extended up the Kaministiquia River valley, almost to the park (Grootenboer, 1971). The Palaeo-Indian campsite south of the park is probably related to the Lakehead Complex which dates to approximately 8,000 B.C. (Fox, 1975).

Table 1: Significance of Archaeological Sites

<u>Site</u>	<u>Theme</u>	<u>Theme Segment</u>	<u>Rating</u>	<u>Association</u>
DcJj-7	Post-Contact Tribes and Bands	Northern Tribes	A	Direct
	Fur Trade and Fur Trading Communities	Lake Huron-Lake Superior-Rainy River Area	C	Indirect
		Lake Superior-Rainy River Area	A	Direct
		Lake Huron-Lake Superior-Rainy River Area	A	Direct
DcJj-8	Indigenous Settlers Traders and Potters	Laurel Peoples	A	Direct
DcJj-9	Unknown			
DcJj-10	Unknown			
DcJj-11	Early Post-Glacial Immigrants	Plano Peoples	Non-rated	Direct

Source: Newton, B. et al. North Central Region Archaeological Survey. Ontario Ministry of Natural Resources, Historical Sites Branch, Unpublished Research Report, Thunder Bay, 1974.

As the ice sheet rapidly retreated northward and the climate warmed, Archaic-culture peoples occupied the region. Though little is known about them, these people appear to have followed hunting and gathering pursuits similar to those of Northern Algonkian-speaking groups documented during the Early Historic period. A local technological innovation, characteristic of the Archaic period, was the working of native copper which could be obtained from rock outcrops on a number of Lake Superior islands or as nuggets (floats) in glacial deposits. Information derived from pollen cores suggests that by 5,000 B.C. the area was covered by a predominately white pine forest on suitable soils, and the climate was warmer than it is presently. No evidence of Archaic-culture peoples has been found in the park but this reflects the scope of the archaeological survey rather than population distribution of these people.

The oldest archaeological site discovered to date within the park which can be positively attributed to an early culture is a small campsite (DcJj-8) dating to the Laurel culture some time between 300 B.C. and 800 A.D. (Newton et al, 1974). Archaeologists include the Laurel people in the Initial Woodland period which is differentiated from the earlier Archaic period on the basis of their production of distinctive clay cooking vessels and their construction of burial mounds in the area west of Lake Superior. Both the tools and activities and the ideas and beliefs which they represent seem to have spread to the local population from groups to the south (Stoltman, 1973). Styles of other tools differ from those of earlier periods, but presently, there is no evidence to suggest that the Laurel peoples' economic or settlement patterns differed significantly from earlier times.

The Terminal Woodland period in the region continues from approximately 800 A.D. into the Historic era when native peoples first came into contact with French explorers and traders. The Blackduck culture, which is distributed mainly to the north and west of Lake Superior, may have developed from the earlier Laurel culture and is differentiated from the latter by their styles of clay cooking vessels and stone tools. The Blackduck people lived in an environment with vegetation, climate and water levels essentially the same as they are today. Local populations may have been Algonkian-speaking and ancestral Kilistinon. At least one Terminal Woodland campsite has been discovered in the park on a portage site which was frequently used in the 18th and 19th century (Newton et al, 1974). The site was excavated during the summer of 1974.

History

While archaeological evidence of the period of French exploration and trade has not been identified to date, it is expected that such remains will be located in the future. Pierre-Jacques Payen de Noyon and his party of coureurs-de-bois are the first recorded Europeans to have visited the Kakabeka Falls area passing the falls in 1688 on their way west to Lake of the Woods (Mountain, 1973). The

Kaministiquia route continued to be heavily used by the French until shortly after 1722, when the alternate Pigeon River route began to gain favour. There is no doubt that the latter route was preferred by La Verendrye and succeeding groups after 1731 (Mountain, 1973).

Following the capitulation of New France in 1759 and the development of English fur trade concerns in Montreal, the Pigeon River route remained the preferred route. The Kaministiquia route was forgotten until 1797 when it was rediscovered by Roderick Mackenzie. An increased awareness of this old route coupled with a threat by the United States to levy taxes on the British fur trade on the Pigeon River route resulted in the relocation of the North-West Company's interior depot from Grand Portage to the mouth of the Kaministiquia River and, as early as 1801, renewed travelling on the Kaministiquia route (Mountain, 1973). With the completion of Fort William in 1807, the Kaministiquia assumed its former importance as the primary route to the western fur trade. This continued until the merger of the North-West Company and Hudson's Bay Company in 1821. Archaeological remains pertaining to this period of the fur trade have been discovered on the historic Mountain Portage (DcJj-7) which by-passes Kakabeka Falls (Newton et al, 1974). However no trace of the historically-documented North-West Company storehouse has been found. It is possible that this structure was destroyed by the construction of the highway or hydro dam.

After 1821, the fur trade traffic on the Kaministiquia route dwindled, but travel on the route and across the Mountain Portage did continue with 13 scientific, exploration and survey expeditions using it during the succeeding 53 years (Mountain, 1973). When the Dawson Road was improved by the Red River expedition in the 1870's, the Mountain Portage no longer functioned as a part of the main southern trans-Canada transportation system. The entire Kaministiquia route was abandoned as a major travel artery after the completion of the Canadian Pacific Railway system in 1885. However, tourists continued to travel the river to view Kakabeka Falls.

While mining and agriculture have never been important economic pursuits in the immediate vicinity of the park, significant silver and barite deposits have been worked in the Whitefish River valley to the south of the park. Further more, limited grain and root crop cultivation and some meat and dairy farming have been practiced in the Kaministiquia valley since the establishment of Fort William in 1807. However, extensive clearing and farming did not occur until around 1880 (Mountain, 1973).

With the growth of Prince Arthur's Landing and Fort William to the east of the park, it was not long before schemes were proposed to utilize the hydro-electric power potential of the falls. As early as 1889, grandiose schemes were developed for the harnessing of the Kaministiquia River power at Kakabeka, and plans were underway for the Kakabeka Falls power station by 1904. This development, plus the construction of a spur rail line from Stanley, resulted in the establishment of the present town of Kakabeka Falls. Initially, the major local employer was the Kaministiquia Power Company, while

the town functioned largely as a supply depot for the area's settlers. However, the natural splendour of the falls continued to attract tourists. In 1957, under the supervision of the former Department of Lands and Forests, a provincial park, incorporating the falls and an associated land base, was established. Presently, tourism is the major source of income in the Kakabeka Falls area.

Existing Development

The Trans Canada Highway (11-17) and Highway 590 pass through the park dividing it into three sectors: land west of Highway 11-17 and Highway 590, land north of Highway 11-17 and land south of Highway 11-17 and Highway 590. The latter two sectors are further divided by the Kaministiquia River, thus increasing the total number of distinct sectors to five (Figure 7). Two sectors are completely cut off from the central portion of the park by either the highways or the combined effect of the highways and the river. This includes the area bounded to the south by Highway 11-17 and to the east by the Kaministiquia River. Consequently, pedestrian and vehicular circulation within the park poses a problem. Access to the beach-picnicking area, which is separated from the falls area by Highway 11-17, is possible only by a park road beneath the highway bridge. South of Highway 11-17 and Highway 590, the eastern and western sectors of the park are linked by what was formerly a highway bridge which now lies within the park's boundary.

Facilities associated with general park and recreation opportunities have been developed in the northern sector of the park proximate to the falls and highway access (Table 2 and Figure 7). Major developments include a viewing area for the falls, two campgrounds, a combined swimming and picnicking area and two additional picnicking areas. The distribution of the developments are controlled by environmental or site considerations. Understandably, much of the development, particularly for the day-use opportunities, focuses on the falls because it is the park's outstanding resource. Remaining developments, particularly for camping and swimming, have been provided in areas of greatest site development potential. Opportunities for dispersed activities are available throughout the remainder of the park; however, minimal development has been provided to facilitate participation in this category of activity.

Kakabeka Falls, with a vertical drop of approximately 33 m and a width of approximately 90 m, is the primary attraction of the park. Closely associated with this is the river gorge 30 m deep extending for some 700 m downstream from the waterfalls. Viewing areas are available on both the eastern and western banks of the river to enhance the viewing of the falls and gorge. A parking lot on the eastern side provides parking for 60 cars and 18 cars with trailers (or 96 cars) and a lot on the western side provides parking for 191 cars. The eastern lot services short-term visitors entering the park solely to view the falls, and this parking is provided free of charge.

The park provides camping opportunities in two car campgrounds and one group camping area. The upper car campground, located in the

Figure 7

Existing Development

- | | | |
|----------------------|-----------------------|------------------------|
| Park boundary | Park office | Field |
| Major break in slope | Gate house | Walking trail |
| Parking | Lookout | Intensive day-use area |
| Beach | Firewood storage area | Campground area |
| Picnicking | Group camping area | |



0 100 250 500 1000 m



Table 2: Existing Development

Camping Areas

Car Camping

total hectares	20
total campsites	156
campsites with electricity (upper campground)	50
comfort stations	3
privies (pair)	4
trailer dumping station (upper campground)	1
trailer water-filling station (upper campground)	1
shower-laundromat building (upper campground)	1

Group Camping

total hectares	5
privies (pair)	2
well (drinking water)	1

Intensive Day-use Areas (i.e., viewing,
picnicking, swimming)

total hectares (approximately)	15
sand beach (metres)	275
total parking spaces (approximately)	500
free parking spaces (inc. 18 trailer spaces)	78
picnic tables (approximately)	100
comfort station	1
privies (pair)	2
changehouses (pair)	2

Walking Trails

number of trails	4
total length in kilometres	6

Park Administration

park office	1
gatehouse	1
maintenance building	1
gas storage building	1
storage shed	1

Water Systems

2

west-central portion of the park, occupies approximately 10 ha and contains 85 campsites, 50 of which are serviced by electrical outlets. The lower campground, situated adjacent to the river, Highway 11-17 and Highway 590, occupies approximately 10 ha and contains 71 campsites. Campsite size and spacing vary in both campgrounds.

The upper campground contains two comfort stations and three pairs of privies within a maximum walking distance of 150 m of any campsite. Also, there is a shower-laundromat within a maximum walking distance of 400 m from any campsite and water outlets at maximum walking distance of 90 m. The lower campground contains one comfort station and one pair each of privies and water outlets within a maximum walking distance of 200 m and 300 m, respectively. A trailer dumping station in the upper campground and a trailer water-filling station situated adjacent to the lower campground service both campgrounds.

The group camping area, located in an open field in the southwestern corner of the park, occupies approximately five hectares. Services are minimal but include two pairs of privies and well water.

The park has three picnic areas. The northern most area, situated north of Highway 11-17 on the eastern bank of the river, is the most extensive (approximately 5 ha) and is the most popular because it provides the widest range of recreational opportunities. There are approximately 70 picnic tables, some hibachies, two pairs of privies and water outlets provided. An internal road which parallels the river's eastern bank and passes under Highway 11-17 provides access to the area. Parking for approximately 200 cars is provided. Swimming opportunities are available in association with this area.

The other two picnic areas are relatively small. The first of these areas is situated immediately south and just in off Highway 11-17. This area contains 16 picnic tables, some hibachies, a water outlet and a parking lot for approximately 45 cars. The second area located adjacent to the falls on the western bank of the river contains 10 tables, a water outlet and a comfort station.

Opportunities for recreational walking and hiking are available primarily in association with the viewing of the falls and the gorge. In addition, the Portage Trail extends approximately 0.4 km south of the viewing area for the falls to the southern terminus of the historic Mountain Portage. It provides scenic views of the falls, the gorge and the Kaministiquia River valley.

Only a limited number of hiking opportunities are available in the remainder of the park. A former scenic drive now constitutes a four-kilometre trail which circumvents the upper campground. This trail provides access to numerous scenic views of the park and the surrounding countryside. Branching off this main trail, the 0.4-km Lookout Trail provides access to additional scenic views as it travels the length of a long sinuous ridge. Finally, a primitive trail leads through the granite outcropping north of the swimming area providing an opportunity to view a particularly rugged segment of the Kaministiquia River.

Winter activities are becoming increasingly popular at Kakabeka Falls. The existing roads and trails in the northern portion of the park provide opportunities for cross-country skiing and snowshoeing. In addition, the abandoned fields located in the southern sector of the park have been opened to provide opportunities for snowmobiling.

The remaining developments with the park are extraneous to the park's recreational infrastructure. These developments include the hydro-electric transmission line, a research plantation, Highway 11-17 and Highway 590.

The transmission line's 30-m right-of-way cuts across the park's northeastern corner. The line and its steel towers, 15 m to 20 m in height, are a very noticeable intrusion on the rock outcrop in this area.

A small research plantation containing various species of pine is located west of Highway 11-17 and Highway 590 near the park border. The location of this plantation is sufficiently isolated that it has little impact on the recreational activities occurring within the park.

Adjacent Land Use

Land adjacent to the park is predominately privately owned. Most of this land, which was once farmland, can now be classified as non-farm residential or speculative property (Figure 8).

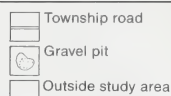
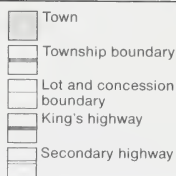
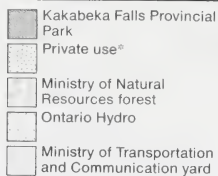
Land immediately to the west, south and southeast of the park is privately owned with the exception of the following; three forested, or partially-forested lots in Paipoonge Township, south of the park, which are Crown land (lot 14, Concession D - 40 ha; Lot 15, Concession E - 40 ha and Lot 12, Concession F - 40 ha); one lot in O'Connor Township, southwest of the park, to which the Ontario Ministry of Natural Resources has rights and part of which is under agreement with the township for gravel extraction (southern half of Lot 1, Concession V - 61 ha); a two-hectare cemetery in Conmee Township (Lot 1, Concession 1); and road rights-of-way.

In Paipoonge Township, Lot 14, Concession D and Lot 15, Concession E, which are Crown land lots, have frontage on the Kaministiquia River. Lot 14 is predominantly forested and hilly, with the exception of the southwestern portion which is low-lying and contains a small tree plantation. Lot 15 rises sharply from the Kaministiquia River and then becomes relatively flat and generally overgrown with shrub vegetation. It contains a small tree plantation in the western portion.

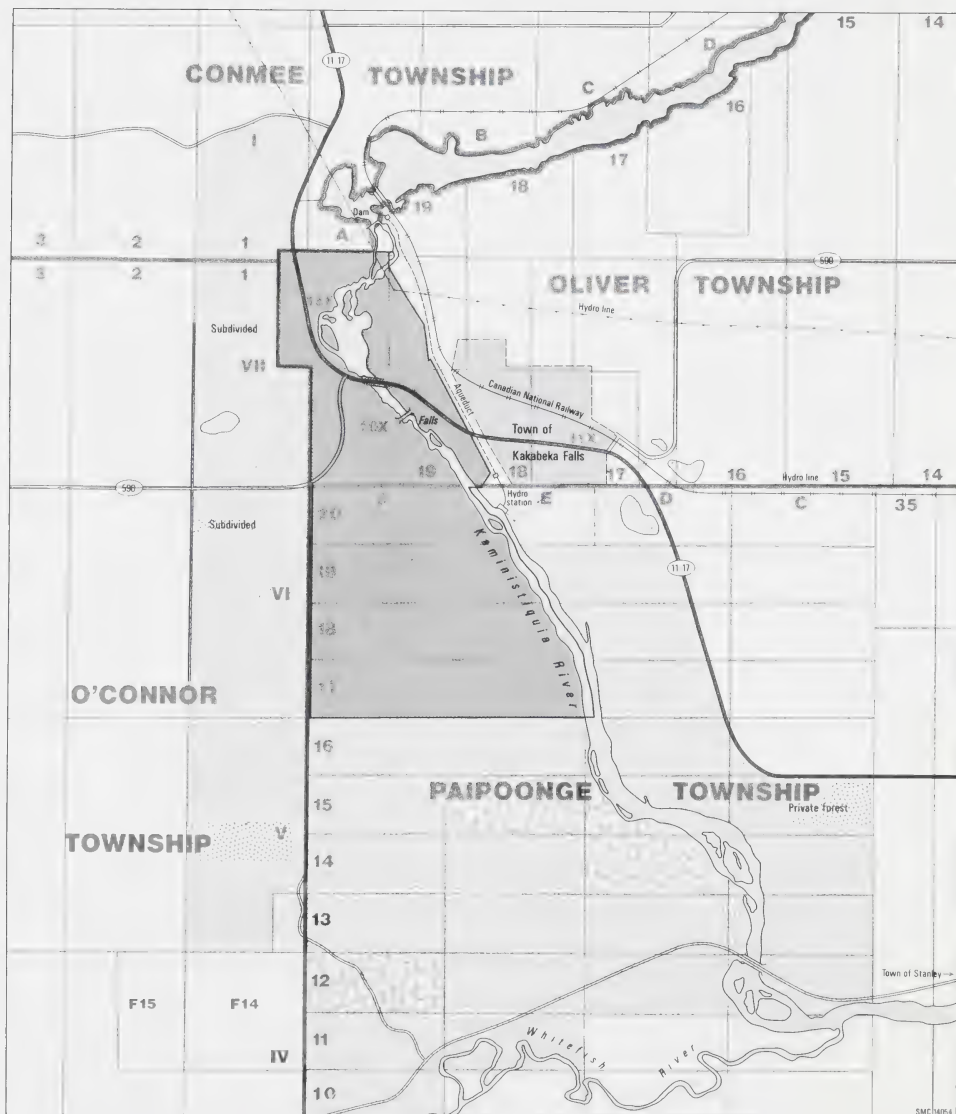
Two lots east of the park are owned by private companies: Great Lakes Paper Company Limited owns Lot 15, Concession C (60 ha) which contains a commercial forest; and Alf Cooper and Company Limited owns Lot 19, Concession D (41 ha).

Figure 8

Adjacent Land Use



*Farm, non-farm residential, speculative or commercial forest



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0 1/2 1 2 km



Adjacent land to the north and northeast of the park contains highway rights-of-way, a hydro dam, aqueducts, a generating station, the C.N.R. line, an Ontario Ministry of Transportation and Communications yard and gravel pit and the village of Kakabeka Falls.

In summary, park expansion is hampered to the west by present roads, to the north by Hydro-Electric Power Commission (H.E.P.C.) development and to the east by the Kaministiquia River, H.E.P.C. development and the town of Kakabeka Falls (Figure 8). Should park expansion be necessary, the area best suited for such expansion, from the standpoint of adjacent land use and development, is the area south of the park.

Analysis of Park Resources

In analyzing the resources and facilities of Kakabeks Falls Provincial Park, it is possible to identify intrinsic characteristics which control their potential contribution to the objectives of the Ontario Provincial Park System. Specific attention is directed to the significance and interpretability of the park's resources, their visual quality, their capability to sustain use and developments associated with the use and the capacities of the existing facilities.

Interpretive Assessment

The interpretive assessment examines the biophysical and cultural resources of the park to determine their potential interpretive and educational value. The assessment is based on two essential criteria: the significance of the resource and its interpretability. The interpretive potential is maximized when significant resources are highly interpretable.

Resource significance is an intrinsic quality. Resources of significance tend to be dramatic or impressive rather than ordinary. They may be of rare occurrence rather than of common occurrence or, contrastingly, they may serve as ideal representatives of some broader or more common resource classification. Such resources are of educational importance and tend to be of provincial or national interest rather than regional or local interest.

Interpretability is a more pragmatic concept and tends to focus more on the user than the resource. Essentially, interpretability relates to the presentation of the resource story to the user. Interpretability is high if the resource or feature presents a particularly graphic illustration of some process or concept. In addition, interpretability tends to be high if the resource is accessible to a substantial user population.









Interpretive potential is discussed in the context of resource stories or themes which relate the significance or value of a given biophysical or cultural resource to the park user. The interpretive story is the essential element of the interpretive program while it is the theme that is instrumental in communicating or interpreting the concept.

Kakabeka Falls, the park's dominant feature, ranks closely behind Niagara Falls in terms of provincial significance. In addition to its dramatic appeal, Kakabeka has a high educational value because the natural processes to which it owes its existence and which are common to many of the world's waterfalls are graphically illustrated (Figure 9).

The structural control of the bedrock, the hard chert-carbonate caprock underlain by softer argillite, is clearly visible on the face of the falls and the walls of the adjacent gorge. Though faults

Figure 9

Interpretive Potential

- | | | |
|--|---|--|
|  Park boundary |  The river (history) |  River terraces (geomorphology) |
|  Major break in slope |  The falls and gorge (geology, aesthetics) |  Beaver colonies |
|  The Contact (microfossils, geology) |  The western gorge (geomorphology) | |



SMR 14055

0 100 250 500 1000 m



cross-cutting the bedrock are not obvious to the casual observer, they are acted upon by the erosive forces of drainage thus affecting the direction and depth of the gorge's formation. A short distance upstream, the geological fault-contact of the granitic base rock and the overlying sedimentary rock is represented by a distinct change in rock type. This contact marks the final point of erosion and retreat of the falls.

Downstream, there is dramatic evidence of the role of the glacial spillway which occupied the Kaministiquia River valley during the deglaciation of Ontario's west Superior region. A large delta deposited by the spillway into a late stage of a post-Duluth glacial lake is represented in the park in the upper campground area. A sequence of distinct terraces, clearly visible on the steep slope descending easterly from the upper campground to the river, provides graphic evidence of the spillway's response to the successive lowering of the post-glacial lakes which occupied the Superior basin.

Even more significant is the story of the history of the gorge. Prior to the formation of the present falls and gorge, the spillway is believed to have plunged over a great double waterfall some several hundred metres in width scouring out the spectacular eastern and western gorges. From this awe-inspiring phenomenon, the river, swollen many times by glacial meltwaters, eroded the falls upstream along the fault-weakened argillite zones to the present location. The result is a gorge some 30 m in depth extending approximately 700 m southward to the eastern and western gorges. It provides an impressive illustration of the power of natural processes.

The combination of these geological and geomorphological themes tells the story of both the falls and the gorge and of the interesting and scenic topography surrounding them. Complementing the importance of the falls and the gorge and in addition to their dramatic appeal and the particularly graphic illustration of the processes which formed them, these features are very accessible to the park user. The park itself is accessible to a wide variety of users ranging from local educational groups to highway travellers. Within the park, the significant features are relatively concentrated in a central location and, consequently, can be visited by even the short-stay park user.

A second major theme, closely associated with the falls, is the historical use of the Kaministiquia River as a travel route. As one of two major arteries used by fur traders, coureurs-de-bois and explorers travelling westward from Lake Superior, this route is of major significance to the history of the expansion of European influence in western Canada. The story of historical travel along the route can be most vividly presented at the falls. Of the entire route, the journey up the Kaministiquia River from Old Fort William to Dog Lake was infamous for its difficulty - its strong opposing currents, its rapids and its portages. Mountain Portage around Kakabeka Falls was the greatest ordeal on the entire journey. The falls are a part of the historical story of the route as they were a major obstacle to travel overcome many times but only with great human effect. It is at the site of the backbreaking Mountain Portage

that the present-day park visitor can gain a very real appreciation for the hardships that these early travellers endured.

The third major theme combines the story of the geological contact which is visible in the northern sector of the park with that of the microfossils contained in the associated Proterozoic sediments. The geological contact clearly marks the surface contact of the underlying granites, typical of the old rock types of the Precambrian Shield, with the more recent Proterozoic shales which overlie the older granites. This dramatic conjunction of rock types could allow for the interpretation of a number of interesting features including rock forming processes, the geological time scale, the principle of superposition, the composition of different rock types and the geological control of topography. Visible major geological contacts are of relatively rare occurrence and where they occur represent phenomena well suited for educational instruction.

Associated with the contact is the second component of the theme the occurrence of microfossils of blue-green algae within the black cherts of the Proterozoic sediments. These microfossils provide evidence of the second oldest form of life known. Believed to be over two billion years old, these internationally-significant fossils are predated only by earlier fossils found in South Africa. These microfossils of Kakabeka Falls (one form has even been named *Kakabekia umbellata*) mark the early stages of evolution when primitive forms of life were beginning to diversify into a wide variety of species representing the biological ancestral origins of all living things. No other single park feature has the potential interpretive power to provoke the imagination of park users calling on them to consider the grand scale on which life actually exists.

A number of additional park features are also important as secondary interpretive stories of the park. The highly visible beaver communities are of high educational value. The dams, ponds, canals and lodges provide an excellent resource particularly for the interpretation of the ecology of these animals and generally as illustrations of broad ecological principles. Although not particularly significant on a provincial or even on a regional scale, the flora and fauna of the park have considerable educational value because they are representative of the flora and fauna of the region. Because of the existence of the park, an ideal opportunity is available to interpret dynamic natural processes and ecological relationships particularly to school groups or other educational users.

Visual Analysis

Aesthetics is an important component of park resource analysis. The quality of the recreationist's experience is largely dependent upon the nature of his contact with the natural environment. Although the total experience is a product of all senses, in the context of a park, the visual contact may be considered the most important. Thus, the following analysis attempts to assess the visual resources of Kakabeka Falls Provincial Park. As individuals perceive the

aesthetics of a landscape differently, this analysis is necessarily subjective.

As part of the visual analysis, a number of park landscapes and features have been identified in recognition of their role or importance to the overall visual landscape of the park (Figure 10). Visual landscapes and features have been classified as follows: features of high visual quality, areas of outstanding or high visual quality, background landscapes, viewpoints, visual buffers and visual disruptions.

Three of the park's natural features were identified as having particularly high visual quality: Kakabeka Falls, the erosional remnant south of the falls and a small waterfall in the southern sector of the park. The falls, plunging over 30 m into the deep gorge and walled by black shale cliffs, is the park's single most outstanding visual feature. Although visually outstanding, high fluctuations in water flows tend to detract, substantially, from the viewing experience. The erosional remnant located in the western gorge rises approximately 30 m from the gorge floor to form a mesa-like natural structure. This is a particularly striking and interesting visual feature. The stream which drains the park's major beaver colony spills over the western wall of the gorge creating a 30 m to 40 m waterfall. Although relatively small, the falls is most appealing in its natural setting.





















Six areas of high visual quality and one area of outstanding visual quality have been identified. These landscapes stand out as being visually attractive in relation to the remaining landscapes of the park. As a result, it is particularly pleasing to the park user to participate in activities within these areas. The falls-gorge area, an area intimately associated with the falls, is the park's most important visual feature and, correspondingly, represents the area of outstanding visual quality. This area contains the falls, the gorge and the cylindrical rock pillar of the western gorge. Closely associated with this outstanding visual area is the remainder of the Kaministiquia River valley. In the northern sector of the park, the river and its rapids are of great visual interest, while in the southern sector, the visual quality of the combination of the river and the gorge dominates.

Remaining areas of high visual quality include the "rugged landscape" of the granitic outcrop in the northern sector of the park, the undulating and canopied landscape associated with the southern margins of the west-central plateau, the "detailed landscape" of the beaver communities and, finally, the "enclosed landscapes" of the abandoned fields in the park's southern sector.

Numerous viewpoints are available which offer a wide variety of interesting and scenic views of the park and the surrounding countryside. The park's two most outstanding viewpoints are located on the western and eastern banks of the river immediately adjacent to the falls. While the western viewpoint offers the superior view of the falls, the eastern viewpoint offers views of the Kaministiquia

Figure 10

Visual Analysis

- | | | |
|--|--|--|
|  Park boundary |  Vista |  5 Erosional remnant |
|  Major break in slope |  4 Special feature of high visual quality |  6 River terrace cascade |
|  Area of outstanding visual quality |  8 Special feature |  7 Feature landscape (river and gorge) |
|  Area of high visual quality |  1 Rugged landscape (rock outcrop) |  8 Undulating canopied landscape |
|  Background landscapes |  2 Feature landscape (rapids) |  9 Detailed landscape (beaver colonies) |
|  Visual buffers |  3 Feature landscape (river) |  10 Enclosed landscape (fields) |
|  Visual disruption |  4 Falls | |



0 100 250 500 1000 m



River valley and the Nor'Wester Mountains in the background.

The other prime viewing opportunity is provided at the northern edge of the western gorge. From the top, where its northern wall meets the present river gorge, there are excellent southerly views of the rock pillar, the Kaministiquia River valley and the Nor'Westers. The hydro generating station is prominent in all of these views. In addition, the summit of the rock pillar offers a variety of interesting short views which include the river and hydro generating station to the east and the walls of the western gorge to the north, west and south.

The remainder of the park, particularly its western and southern sectors, provide a number of vistas of the surrounding countryside. Subjects range from the Kaministiquia River valley and the Nor'Westers 20 km to 30 km to the southeast, to the rolling farmland northeast of the village of Kakabeka Falls.

Areas identified as visual buffers are forested and act as screens to block out or to reduce undesirable visual distractions external to the park. A major buffer is identified on the eastern bank of the Kaministiquia River. From the valley bottom or from the more elevated areas of the park to the west, this forest cover is invaluable in buffering any adjacent development that might occur east of the river in the future. Remaining buffers have been identified as screens to roads in particular, as well as to other adjacent developments.

The major background landscape identified is formed by the steep slopes bordering the plateau in the western sector of the park. This feature serves as a background to westerly views from the falls-gorge area and the beach-picnicking area.

Hydro aqueducts parallel the park's eastern boundary extending from the dam, north of the park, to the generating station in the eastern gorge. Although unsightly, the aqueducts are substantially buffered by existing forest cover. The hydro generating station, although it may detract from the viewing experiences of some park users, is well sited within the eastern gorge. The final visual disruption, the hydro transmission line which cuts across the northeastern corner of the park, is highly distractive in this otherwise attractive area.

Environmental Analysis

The environmental analysis determines the capability of the park's resource base to sustain use and development associated with use. The product of this analysis constitutes a base reference to which management and development alternatives, stimulating additional use and requiring additional development, can be related. Such an analysis, therefore, determines the desirability of given management alternatives in an environmental context.

The assumption inherent in this type of assessment is that neither use nor development should cause a detrimental impact on natural processes or land forms. Such an assumption is, of course, particularly appropriate in the context of a provincial park. It is recognized that all use and development in reality will result in some degree of impact. However, the resulting impact should not impair the natural integrity of the area.

The environmental analysis was accomplished as follows. Firstly, the park was divided into landscape units or areas of uniform physical character (Figure 11). For each unit, constraints to both intensive uses (i.e., fully-serviced car campground) and extensive uses (i.e., hiking trails) and their associated developments were identified. Constraints were determined through the examination of relevant site parameters such as slope, soil depth, soil type, permeability, degree of wetness, flooding and vegetation (Table 3). Finally, the collective severity of the identified constraints was assessed to provide an overall rating of constraint for each landscape unit. Constraints to intensive uses and associated development are mapped separately from those to extensive uses (Figure 12 and Figure 13).

For more site demanding intensive uses, the park is dominated by major to extreme constraints. The areas with a high degree of constraint can be identified as follows: the granite outcrop in the northern sector of the park, the areas of steep slope adjacent to the upper campground flatland, the gorge and river valley and, finally, scattered areas subjected to either a high degree of wetness or flooding.

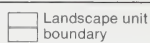
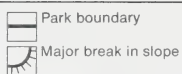
On the other hand, three distinct areas having a low degree of constraint to intensive uses were also identified: major sectors of the existing day-use area adjacent to the swimming beach and west of the falls, the upper campground flatland and the area of the abandoned fields in the southern sector of the park. Generally, these areas are flat to gently sloping, deep soiled and well drained.

As noted previously, the site requirements of extensive uses are less demanding than those of intensive uses. Consequently, much of the park's area exhibiting major to extreme degrees of constraint to intensive uses has only a moderate degree of constraint for extensive uses. Principle areas falling within this category include the granite outcrop in the northern sector of the park and all but the most severe slopes associated with the gorge and river valley in the southern sector.

In summary, the environmental assessment reveals that only limited sectors of the park are well-suited for intensive uses. It is noted that a considerable portion of these sectors are already developed. The majority of the remainder of the park is suited to extensive but not intensive uses. A very limited area, primarily associated with severe slopes or high degrees of wetness, is not well suited for any type of use.

Figure 11

Landscape Units



SMC 14057

0 100 250 500 1000 m



Table 3: Environmental Constraints to Use

Landscape Unit	Slope		Soil Depth		Permeability		Degree of Wetness		Flooding		Vegetation		Degree of Constraint	
	I	E ²	I	E	I	E	I	E	I	E	I	E	I	E
a Granite outcrop	X ³		X		X	X	X		X		X		C	B
b Undulating topography, stony	X		X		X		X		X		X		C	A
c Flood plain area							X		X		X		D	B
d Day-use, altered drainage							X						B	A
e Swamp, larch-spruce									X	X			D	C
f Moderate-steep slope, groundwater seepage	X						X				X		D	B
g River terrace, changing slopes	X	X									X		D	C
h Steep slope, well drained	X		X										D	B
i Flat plateau-like terrain, good drainage											X		A	A

(continued)

1. I - intensive uses and associated developments
 2. E - extensive uses and associated developments
 3. X - existing constraint
4. A - minor
 B - moderate
 C - major
 D - severe

Table 3: Environmental Constraints to Use (cont'd)

Landscape Unit	Slope		Soil Depth		Soil Type		Permeability		Degree of Wetness		Flooding		Vegetation		Degree of Constraint	
	I	E	I	E	I	E	I	E	I	E	I	E	I	E	I	E
j Moderate slope, lower campground-warehouse area	X		X				X								C	A
k Flat to slightly-sloped campground, parking			X				X								B	A
l Flat, dry, well-drained sand on shale			X		X		X						X		C	A
m Talus slopes, poison ivy	X	X	X		X						X		X		D	C
n Esker-like ridges, well-drained	X						X						X		C	B
o Variable slopes, wet and dry areas, undulating	X						X			X			X		C	B
p Wet, swampy area					X		X			X	X	X	X		D	C
q Low, wet, poorly-drained beaver community					X		X			X	X	X	X		D	D

(continued)

Figure 12

Constraints to Intensive Use and Development


- | | | |
|--|--|---|
|  Park boundary |  Minor |  Major |
|  Major break in slope |  Moderate |  Extreme |



Figure 13

Constraints to Extensive Use and Development



Park Capacities

Recreational carrying capacity, defined as the level of recreational use at which quality remains constant (Wagar, 1964), is an important concept in park planning. The quality referred to in this definition may be kept constant at either a high or a low level. Furthermore, quality may relate to either the physical site or the recreationist's experience. Finally, a site or facility capacity for one recreational activity may vary substantially from that for another. Thus, given the complexity of the concept, it is normally not feasible to attempt to establish definitive user-day capacities in the initial phases of a park planning exercise.

The environmental analysis, while identifying intrinsic resource potentials and limitations, also provides a crude measure of capacity. Although, not expressed definitively (in user-days, for example), this analysis identifies the relative capabilities of individual landscape units to support both intensive and extensive uses and their associated developments. Despite a level of superficiality, the environmental analysis is sufficiently detailed to be utilized as a basis for decisions which weigh the needs of site protection and preservation against the demands for additional recreational opportunities. Thus, given the availability of a general measure of recreational carrying capacity and recognizing those difficulties noted in the preceding paragraph, the establishment of a precise carrying capacity can be attempted once specific use levels and development requirements are determined. Once this is accomplished, definitive capacities can be more reasonably identified during the site design process.

Unlike the recreational carrying capacity, it is important to determine the capacity of the existing park facilities to accommodate use early in the planning exercise. This capacity may be referred to as the design capacity (Held, 1969). Through a comparison of the design capacity to the existing levels of use and estimates of demand, the need to expand existing recreational facilities to accommodate additional users can be determined. Once design capacities are established, the environmental analysis can then be examined purposefully to determine if the potential exists for additional development and, if so, where the most suitable sites are located.

The falls viewing area receives the highest visitation of any area in the park. A survey undertaken during the summer of 1974 recorded an average daily visitation of between 3,000 and 4,000 visitors with as many as 6,500 visitors on peak days. The two parking lots associated with this area, one on each side of the falls, represent the number of users the viewing area has been designed to accommodate. The parking lot on the eastern side is provided for non-paying viewers only. This lot has a capacity for 60 cars and 18 cars with trailers (or 96 cars) or approximately 230-290 vehicles per hour based on a length of stay of 20 minutes. Peak use is presently estimated to be between 150 and 200 vehicles per hour. Should the present turnover rate decrease due to the provision of additional recreational opportunities for example, this capacity figure could become markedly

reduced. There is no available space for expansion of this parking lot. The second parking area on the opposite side of the river which has parking spaces for 191 cars experiences very little use because an entrance fee is charged for vehicles passing the gatehouse.

The beach and picnic area, north of Highway 11-17 and enclosed by a park road and the Kaministiquia River, occupies approximately five hectares. This area is heavily used on summer weekends, particularly on warm, sunny days. During one such day in 1974, 306 vehicles were counted, occupying the 200 available parking spaces and the shoulders of the access roadway. These 306 vehicles represent approximately 1,400 visitors, assuming an average of 4.6 persons per party (Ministry of Natural Resources, 1974). In addition, the number of users in this area also includes people who walk in from the campgrounds, from elsewhere in the park and from the village of Kakabeka Falls.

To estimate the carrying capacity of this area for sunbathing and picnicking, the amount of land suitable for each of these activities had to be determined. It was estimated that a total of 1.3 ha would be suitable for picnicking. The present dry beach area, which includes sand beach and grassed areas up to 30 m inland, covers a total of approximately 4,680 sq m. Little opportunity exists to increase the amount of dry beach.

Using standards considered appropriate within natural environment parks, the carrying capacity of this area for sunbathing and picnicking is approximately 700 people, 200 on the dry beach (using a medium density standard of 22.5 sq m per person) and 500 in the picnic areas (using a standard of 90 sq m per picnic unit and not over 50 units per area). Using standards considered appropriate within recreation parks, the carrying capacity is slightly over 1,000 people, 500 on the dry beach (using a high density standard of nine square metres per person) and slightly over 500 in the picnic areas (with a density slightly higher than that for natural environment parks). Although these figures are only rough guidelines, they do suggest that this area is nearing or exceeding its capacity on days of peak use. Expansion of this area is hampered to the east by a swamp, to the south by Highway 11-17 requiring buffering, to the west by the Kaministiquia River and to the north by the area of granite outcrop.

There are two other small picnic areas in the park. One of these, on the eastern bank of the Kaministiquia River near the park office, has approximately 16 picnic tables and is heavily used on peak days. There is no suitable space for expansion of this area because it is limited by the river and a park access road. The remaining area, just west of Kakabeka Falls, has approximately 10 picnic tables and is heavily used on peak days. Adjacent to the under-utilized western parking lot near the viewing area for the falls, this picnic area has more than adequate parking opportunities. It is possible to expand this area; however, due to the existence of nearby activities, in particular viewing, future conflicts between uses could pose a problem if an expansion was undertaken.

The campgrounds are occupied to full capacity for most of July and August and do not meet the present demands for camping in the

park. During these months in 1974, 1,752 vehicles were turned away. The lower campground presently has 71 campsites. Here the campsite density is seven sites per hectare which is within the density range considered appropriate for natural environment parks (3.75 - 8.5 sites per hectare). There is no suitable space for further expansion of this area. In fact, a variety of constraints argue strongly for considering a reduction to the present number of campsites in this area.

The upper campground presently has 85 campsites in operation. The campsite density here is eight sites per hectare which is within the range considered appropriate for both natural environment and recreation parks (3.75-8.5 sites per hectare and 7.5-10.5 sites per hectare, respectively). Land adjacent to this area and enclosed by the scenic drive covers approximately 25 ha, of which approximately 23 ha are suitable for campsite development. Using a standard for natural environment parks (minimum density of 3.75 sites per hectare to a maximum of 8.5 sites per hectare, with a minimum of 37.5 m spacing between campsite centres), this area has a potential campsite capacity of between 85 and 195 campsites. Using a corresponding density range for recreation parks (minimum density of 2.5 sites per hectare to a maximum density of 10.5 sites per hectare, with a minimum of 80 m spacing between campsite centres), the corresponding potential campsite capacity of this area ranges from 170 to 240 sites.

Recreational Use and Demand

In examining the recreational uses and demands from the perspective of Kakabeka Falls Provincial Park, the emphasis of the following discussion is on the incidences of use, the characteristics of users and trends in participation. This information, as a statement of existing needs, can be related to the design capacity of the existing facility infrastructure in order to determine its adequacy. However, in order to relate use and demand to recreational facilities, it is necessary to examine separately, the characteristics of individual user groups as each participates in characteristic sets of activities requiring different facilities at different sites within the park. Thus, to assess the adequacy of existing facilities, it is necessary to have an understanding of the levels of use for each user group, their activities and their perceived needs and preferences.

Present Use

Kakabeka Falls Provincial Park annually receives the highest visitation of any provincial park in Northwestern Ontario. Over the five year period, 1972 to 1976, visitation within the operating season has varied from approximately 300,000 to almost 400,000 (Figure 14, Table 4). From 70 to 85 percent of the visitors stop for the single purpose of viewing the falls.

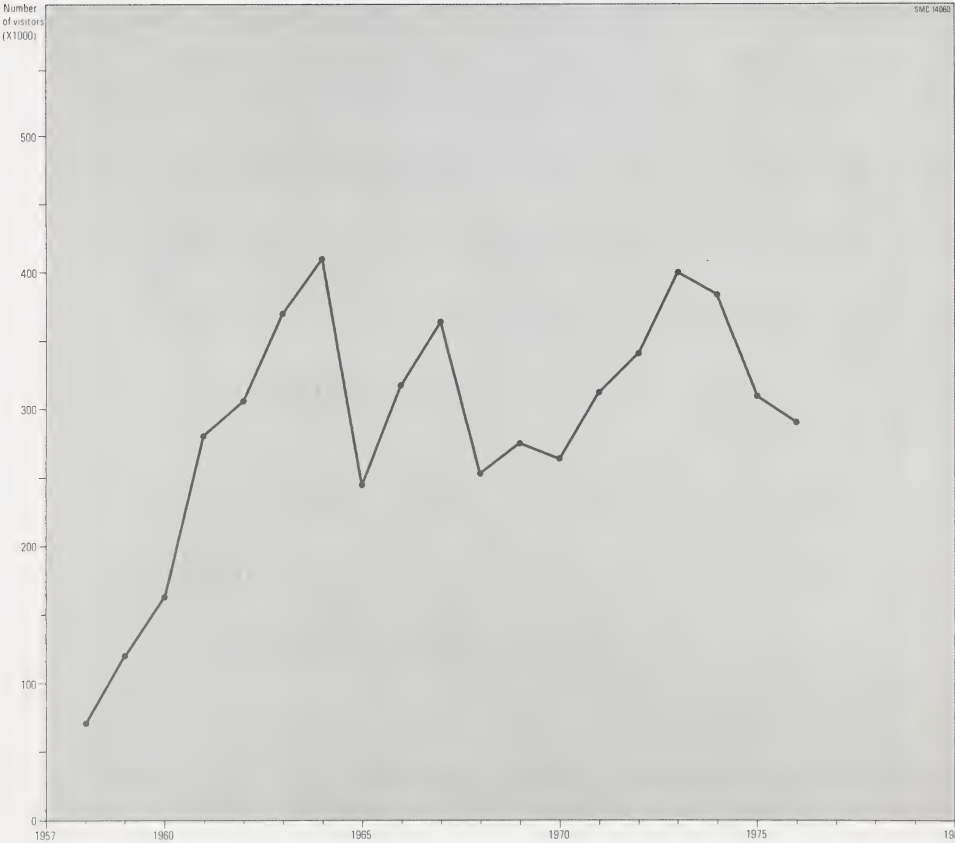
Interestingly, visitation peaked in 1974 and has since fallen off subsequently to the 1976 level, which is the lowest experienced over the five-year period. Caution should be exercised in interpreting these fluctuations. The non-permit visitation estimate is derived from a mechanical traffic count and therefore subject to certain limitations (Table 4).

However, a degree of substantiation is provided by the marked annual variation of car camping and permit day-use. Since these user groups obtained park permits, accurate visitation figures are available. In the case of car campers, the highest annual total (1972) exceeds the lowest annual total (1976) by some 45 percent. With regard to permit day-users, the annual variation has been even more dramatic. However, this variation is a more normal one, increasing by more than 50 percent over the three-year period for which figures are available, from a low of 25,700 in 1974 to a high of 39,500 in 1976.

The high levels of visitation received by Kakabeka Falls Provincial Park are attributable to a combination of the natural attractiveness of the falls and its accessibility to potential users. The Trans Canada Highway, with a relatively high percentage of vacation traffic in the summer months, passes directly through the park. Tourists travelling this route participate primarily in viewing the falls and camping. Also significant is the park's location near the city of Thunder Bay which is approximately a 30-km or one-half hour

Figure 14

Annual Park Visitation



drive to the east. Thunder Bay and its area's residents are primarily attracted by the viewing, beach and picnicking opportunities.

User Groups and Trends

Five major categories of park users have been identified based on a variety of considerations including season of use, major activity and related park management practices. The five categories are as follows: car campers, those who camp beside their vehicles on designated sites within an established park campground; group campers, those who camp as a large group in an area designated for group camping; permit day-users, those who pay to enter the park and participate in any of a variety of day-use activities; non-permit day-users, those who enter the park to view the falls only and utilize the free parking lot; and winter day-users (Table 4).

Car Campers

Of the 30,000 to 40,000 car campers that stay overnight at Kakabeka Falls annually, approximately 65 percent are Canadian, almost 50 percent are residents of Ontario and approximately 12 percent are residents of Thunder Bay and vicinity (Ontario Ministry of Natural Resources, (1975). Approximately 35 percent originate in the United States, primarily from the midwestern states of Michigan, Minnesota and Wisconsin.

Given the park's location in the northwestern sector of the province, the relatively high representation of car campers originating in Southern Ontario is particularly interesting. Metro Toronto, approximately 1,400 km from the park, contributes almost 10 percent of the park's car campers. The Central Ontario Lakeshore Urban Complex (COLUC), which incorporates Metro Toronto, accounts for approximately 15 percent and the Toronto-Centered Region (TCR), which incorporates both COLUC and Metro Toronto, accounts for just over 20 percent.

Reflecting the origins of the park's car campers, 72 percent indicated their visit to Kakabeka Falls was part of an annual vacation, while only 12 percent classified themselves as weekend campers (Ontario Ministry of Natural Resources, 1975). Correspondingly, the length of stay is short with the average varying from 1.14 to 1.44 days throughout the period 1972 to 1976. The 1975 camper survey revealed that 73 percent of the camping parties stay only one night in the park, 85 percent stay two nights or less and 91 percent stay three nights or less.

Although the park has the important function of supplying accommodation to travelling campers, a substantial number of its campers are attracted to the park for other reasons. Of those surveyed in 1975, 18 percent identified Kakabeka Falls as their main destination. An additional 19 percent indicated the park to be one of several destinations on a larger trip. Almost 63 percent considered Kakabeka Falls strictly as a stop-over facility. These data, coupled

Table 4: Park Visitation

Activity	1972	1973	1974	1975	1976
Car camping (number of campers)	49,000 (43,000)*	46,200 (34,200)	43,900 (30,400)	43,400 (36,700)	42,700 (29,900)
Group camping	--- **	---	800	1,400	2,000
Permit day-use			25,700	32,900	39,500
Non-permit day-use (Falls viewers only)	292,000***	353,300	317,600	231,900	206,100
Winter use	---	---	---	---	---
Total	341,000	399,500	384,300	309,600	290,300

* Bracketed numbers indicate the number of campers corresponding to the camper-day figure

** Figures unavailable

*** Figure is combination permit day-use and non-permit day-use

with the length of stay figures indicating that 27 percent of campers stay two or more nights, reveal that approximately one-third of the car campers are essentially destination users. It is important to note that this level of destination use occurs in the absence of a visitor services program. It is reasonable to expect that destination use, or at least the length of stay, would increase should such a program be developed. This point is pursued further, elsewhere.

To illustrate participation, Table 5, column I is included to show the percentage of all respondents that participated in each of the activities listed. Column II in Table 5 indicates what percentage of the respondents spent the most time doing which activity. It is interesting to note that the top three activities are the same in both categories; that is, the activities in which the most people participated are also the ones which occupied the most time. Perhaps most surprising is the amount of participation in trail-hiking and walking given that there is a lack of facilities developed for this activity. This information is misleading to some degree in that the low incidence of participation in interpretive and recreational activities (i.e., conducted walks, slides shows, motorboating) is a reflection of the lack of opportunity, not necessarily a lack of demand. Overall, however, in summing up the activities of this park user group, their participation is essentially confined to the traditional activity package of camping - picnicking - swimming or to the completely unstructured activities requiring a minimum of facilities.

The majority of car campers (approximately 70 percent) favoured the existing management orientation of the park. Of the remainder, almost 20 percent favoured a greater recreation orientation. With regard to specific activities, the campers' opinions indicated a strong affinity to a natural atmosphere (Table 6). Generally, car campers supported the inclusion of "adventure" play areas, man-made lakes and beaches, the teaching of outdoor recreational skills and bicycling in the park but opposed snowmobiling, controlled hunting, organized recreation and horseback riding.

The reactions of car campers to the park were generally favourable, with over 90 percent expressing general satisfaction with their visit. In general, car campers felt that the park should continue to be managed as it is, although a slight margin favoured a greater recreation orientation. Although overall satisfaction was expressed, a number of improvements were recommended (Table 7). Generally these suggestions related to the maintenance and operation of existing facilities.

The most prevalent and perhaps the most significant of these recommendations was that the park's visitor services program should be improved. Adding support to the recommendation is that almost 12 percent of the park's campers indicated they had difficulty obtaining information about the facilities and programs. Although seemingly low, this is a significant percentage given the fact that it represents the highest expression of dissatisfaction on this point given by campers at the 18 provincial parks which were surveyed in 1975.

Table 5: Activities of Car Campers

	I Participation Rates for Selected Activities*	II Time Consumption for Selected Activities**
Visiting viewpoints	69.4	11.3
Relaxing	68.6	26.4
Swimming	42.9	20.8
Viewing and photographing	33.8	7.0
Casual play	32.5	6.2
Picnicking	31.2	4.3
Trail-hiking and walking	29.4	8.3
Visiting natural historic sites	14.8	.6
Bicycling	5.3	1.8
Fishing	4.2	1.2
Play facilities	3.7	---
Conducted walks	2.3	---
Canoeing	1.7	---
Motorboating	1.2	---
Park talk/slide show	1.0	---

* percentage of respondents who indicated participation in each activity.

** percentage of respondents who indicated having spent the "most time doing" each activity.

Source: Park Camper Survey, Ontario Ministry of Natural Resources, 1975.

Table 6: Opinion of Park Facilities or Uses

<u>Facility or Use</u>	<u>Should be Present</u>	<u>No Opinion or No Reply</u>	<u>Should Not be Present</u>
Horseback riding	33.0	26.6	40.4
Snowmobiling and trail-biking	12.7	15.8	71.5
"Adventure" play areas	57.7	25.7	16.5
Teaching outdoor or recreational skills	57.7	26.3	16.0
Bicycling	73.2	15.6	11.2
Tennis	32.8	33.2	34.0
Man-made lakes and beaches	63.9	15.0	21.1
Organized recreation	21.6	33.1	45.3
Controlled hunting	10.9	17.6	71.4

Source: Park Camper Survey, Ontario Ministry of Natural Resources, 1975.

Table 7: Improvements Recommended by Campers

	<u>First Recommendation</u>	<u>Second Recommendation</u>	<u>Third Recommendation</u>
Leave as is	10.8	.6	--
Improve showers, etc.	7.1	2.2	.4
Improve washrooms	6.5	3.1	.5
Control noise	3.3	1.2	--
Improve beach facilities	6.5	1.0	.8
Improve trails	1.4	1.2	.1
Improve campsites, hydro	1.7	1.9	--
Improve interpretation, information	10.5	1.6	1.4
Other	52.1	81.0	96.7

Source: Park Camper Survey, Ontario Ministry of Natural Resources, 1975.

Considering trends in car camping, annual levels of use generally have been increasing over recent years but at a decreasing rate (Figure 15). This trend closely resembles the increase in traffic on the Trans Canada Highway through the park (Figure 16). However, major fluctuations occur within this generally increasing trend. Compounding the effects of the increasing camper pressure is the distribution of campers through time. Approximately 80 percent of the annual campground use occurs in July and August. During most of this period, the park's campgrounds are filled to 100 percent capacity (Figure 17). Peaks in weekend use, particularly Saturdays during June, are indicative of local users camping in the park on weekends.

The car camping demand over the past few years has exceeded the campground capacity during the months of July and August. The park's campgrounds are typically fully occupied by early afternoon. A special survey undertaken in 1974 during the months of July and August showed that 1,752 camping parties had to be turned away. Accommodating this number would require a minimum of 28 additional campsites, assuming use to be evenly distributed throughout this period.

Group Campers

The second and remaining category of camper, the group camper, accounted for only 1,979 users in 1976. Groups are generally composed of either local youth groups or non-local school groups. The local groups tend to spend their time within the park and the non-local school groups tend to visit the surrounding area utilizing the park as a home base. Group camping at Kakabeka Falls has increased somewhat in recent years. The park received 1,388 and 1,979 group camper days in 1975 and 1976, respectively. Correspondingly visitation received in the four preceding years varied from approximately 475 to 775 user days. In the summer of 1976, the area currently utilized

Figure 15

Annual Camper Visitation

- Number of camper days
- Trend in number of camper days
- Number of campers
- Trend in number of campers

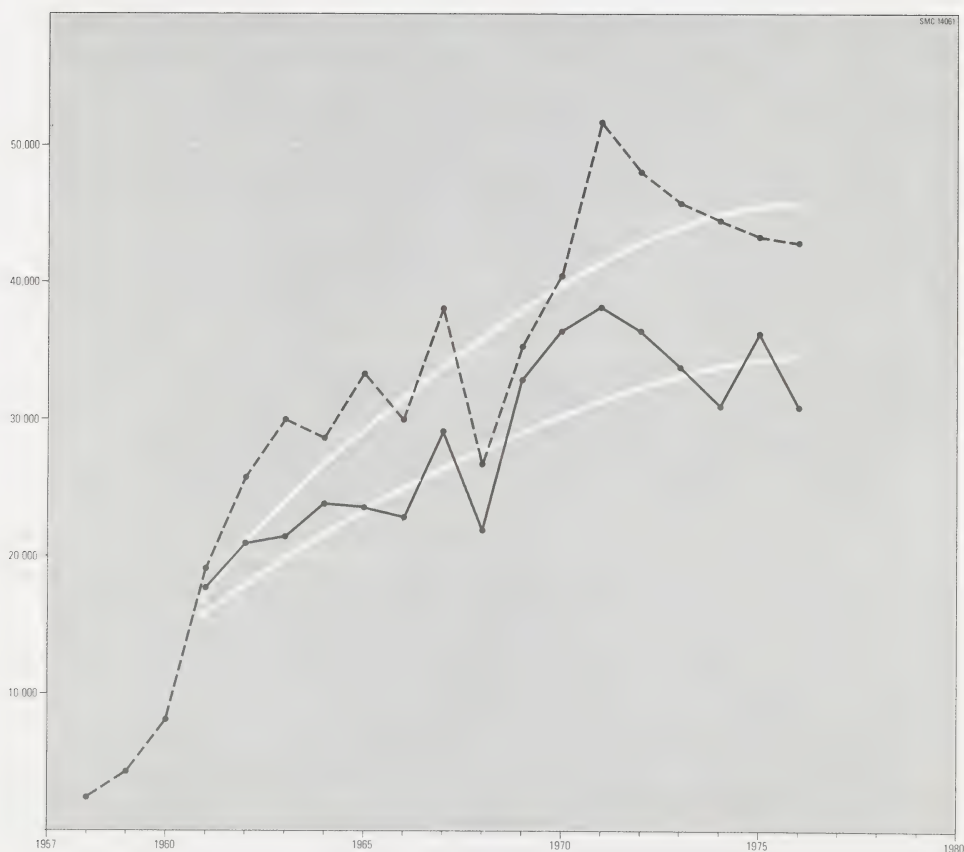
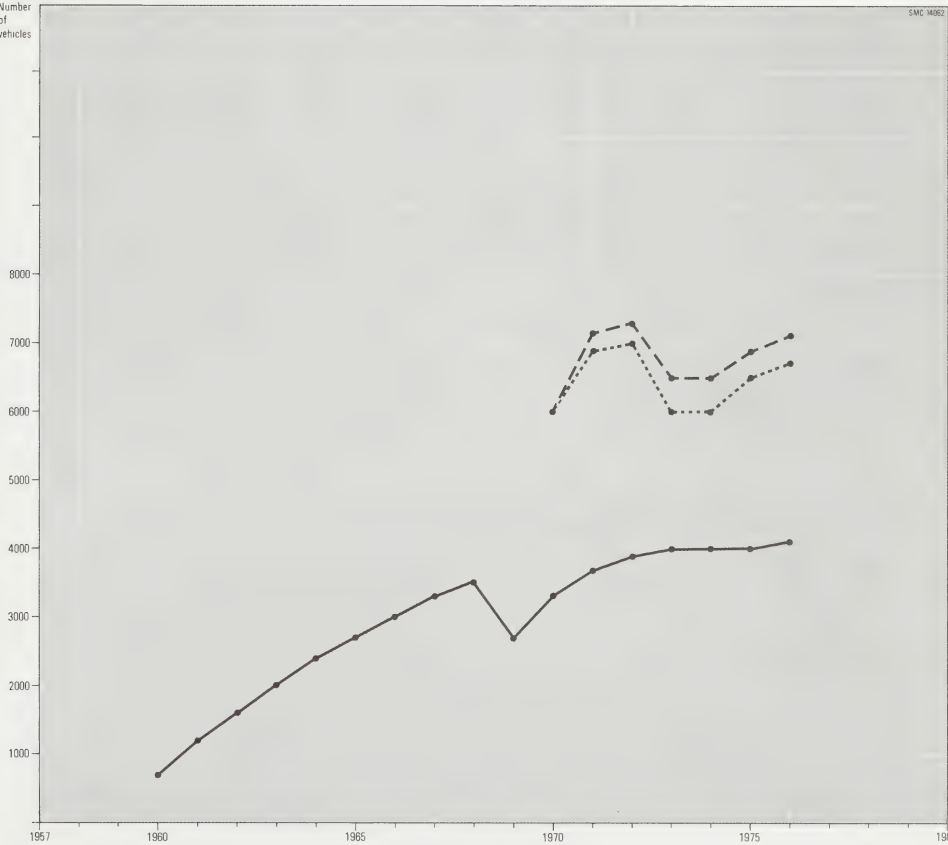


Figure 16

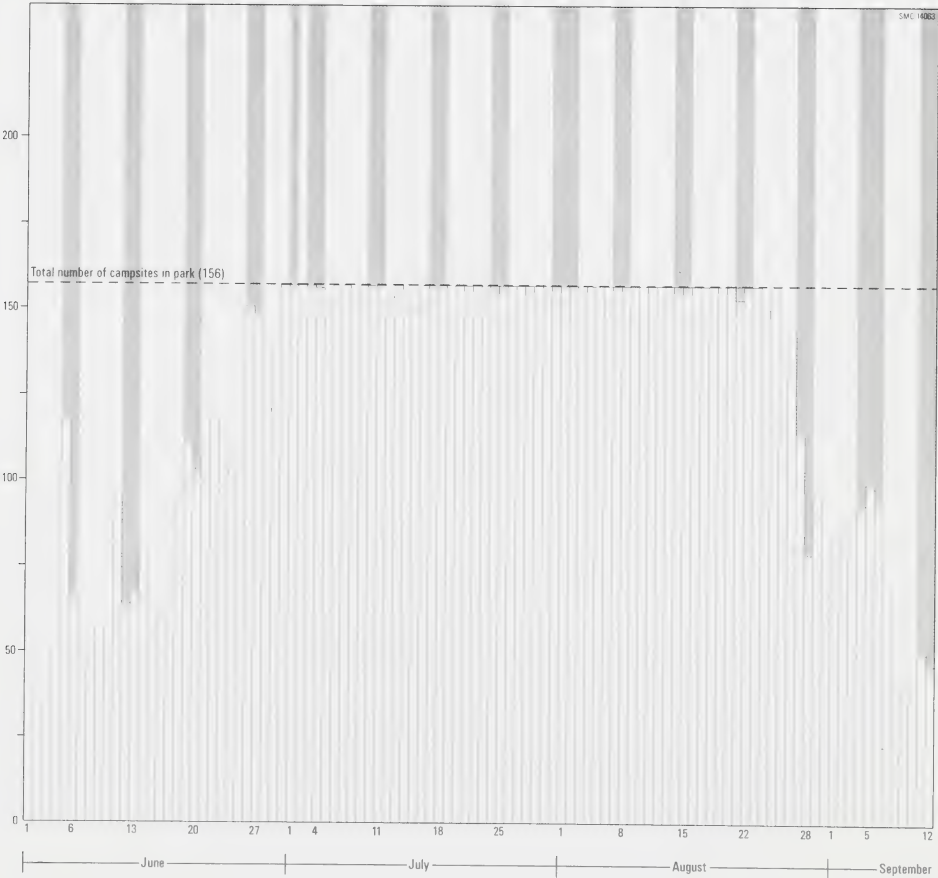
Traffic Volumes
Past Kakabeka Falls Provincial Park

- Annual average daily traffic
- Summer average daily traffic (1970-1976)
- Summer average weekday daily traffic (1970-1976)



Campground Use, Summer 1976

Number of campsites occupied Weekend and statutory holiday



for group camping was occupied approximately 25 days of the season. The existing use is well below capacity.

Day-users

Approximately 20,000 permit-holding day-users visited the park in 1976. Sixty-nine percent of these day-users were from the Thunder Bay area; the remainder was composed of tourists travelling Highway 11-17 (Ontario Ministry of Natural Resources, 1974). Sixty-four percent of the permit-holding day-users visited the park as a member of a family group, 20 percent with a group of friends and 13 percent were couples. Reasons given for visiting the park include its proximity to their residence, its situation adjacent to Highway 11-17, the attraction of the falls, its natural setting and the opportunities provided for swimming, sunbathing and picnicking (Table 8). The average length of stay of this group was four hours.

Table 8: Permit Day-users' Reasons for Visiting Park

	Percent
Close to home	10.8
Convenient	28.4
Recommended	10.3
Enjoyed past experience	5.4
Natural setting	16.3
Beach, water and/or swimming	1.0
Prefer provincial parks	11.6
Good campsites	1.7
Facilities in park	4.0
Visiting or business	6.2
Other	4.3
	100.0

Source: Park Day-user Survey, Ontario Ministry of Natural Resources, 1974.

Within the park, picnicking, swimming, wading and relaxing were the most popular activities (Table 9). Other activities included casual play, visiting scenic viewpoints, photography and recreational walking. The 1974 day-user survey revealed that, of the total number of permit-holding day-users, 90 percent were satisfied with their visit to the park (37 percent were very satisfied), while only 3 percent indicated dissatisfaction. In general the questionnaire respondents tended to favour such park facilities and activities as bicycling, horseback riding, man-made beaches for swimming, "adventure" playgrounds and tennis (Table 10). Facilities and activities they tended to feel should not be included were concession stands, snowmobiling, motor or trail-biking and controlled hunting. Regarding the future orientation of the park, 51 percent of the questionnaire respondents would like to see the park kept "as is", 20 percent would like to see it "more natural" and 29 percent would like to see it "more recreation-oriented".

Table 9: Activities of Day-users

<u>Activity</u>	<u>Percentage by Activity</u>	<u>Participation by Most Popular Activity</u>
Picnicking	65	20.9
Swimming or wading	62	28.0
Trail-hiking	21	3.3
Bicycling	3	.6
Viewing or photographing	5	4.7
Causal play	31	2.3
Relaxing	50	31.5
Visiting viewpoints, scenic lookouts	44	7.1

Source: Park Day-user Survey, Ontario Ministry of Natural Resources, 1974.

Table 10: Day-users' Opinions of Park Facilities

<u>Facility/Use</u>	<u>Should be Present</u>	<u>No Opinion/ No Reply</u>	<u>Should not be Present</u>
Horseback riding	49.9	20.3	29.8
Concession stands	35.0	17.2	47.8
Snowmobiling	20.8	17.5	61.8
Bicycling	62.3	15.2	22.5
Man-made beaches, lakes for swimming	64.7	15.5	19.9
Adventure playgrounds	60.1	17.4	22.4
Motor or trail-biking	21.5	15.7	62.7
Tennis	49.3	26.1	24.6
Controlled hunting	12.1	17.4	70.5

Source: Park Day-user Survey, Ontario Ministry of Natural Resources, 1974.

July is the month of highest day-use visitation, accounting for 57 percent of the total. Throughout the summer season, visitation tends to be highest on weekends (Figure 18). During days of peak use, the road to the beach area is congested with vehicles parked on either side. Although only 200 parking spaces are provided 306 vehicles were counted at one time in this area on a typical warm Sunday afternoon in July. It is expected that future levels of day-use will respond primarily to population growth in Thunder Bay and the availability of alternative opportunities.

Non-permit Day-users

It is estimated that in excess of 200,000 non-permit day-users (i.e., viewing the falls only) visit the park annually. In 1973 and 1974, this user group exceeded 300,000. During July and August, visitation by these users varied between 2,400 and 6,400 people per day. Sixty-eight percent stayed less than 30 minutes and 95 percent stayed less than 60 minutes. On the average, 13 percent of these users originated in Thunder Bay; however, this percentage was found to vary from a low of five percent on weekends to a high of almost 25 percent on one particular Sunday.

Winter Users

Little information is available on winter users. Winter activities include viewing, photography, cross-country skiing, snowshoeing and limited snowmobiling. An outdoor skating rink and toboggan run were established in 1961; however, although initially popular, their use declined, and their operation was discontinued in 1965 and 1970, respectively. The most popular winter activities at present include viewing, photography, cross-country skiing, snowshoeing and walking for pleasure. Although a snowmobiling area has been designated in the southern portion of the park, it receives only limited use. Most snowmobilers are using the park to by-pass the Highway 11-17 bridge when travelling from the village in the east to Conmee and O'Connor in the west. It is expected that the number of winter users will increase, corresponding to general trends in increased winter recreational participation.

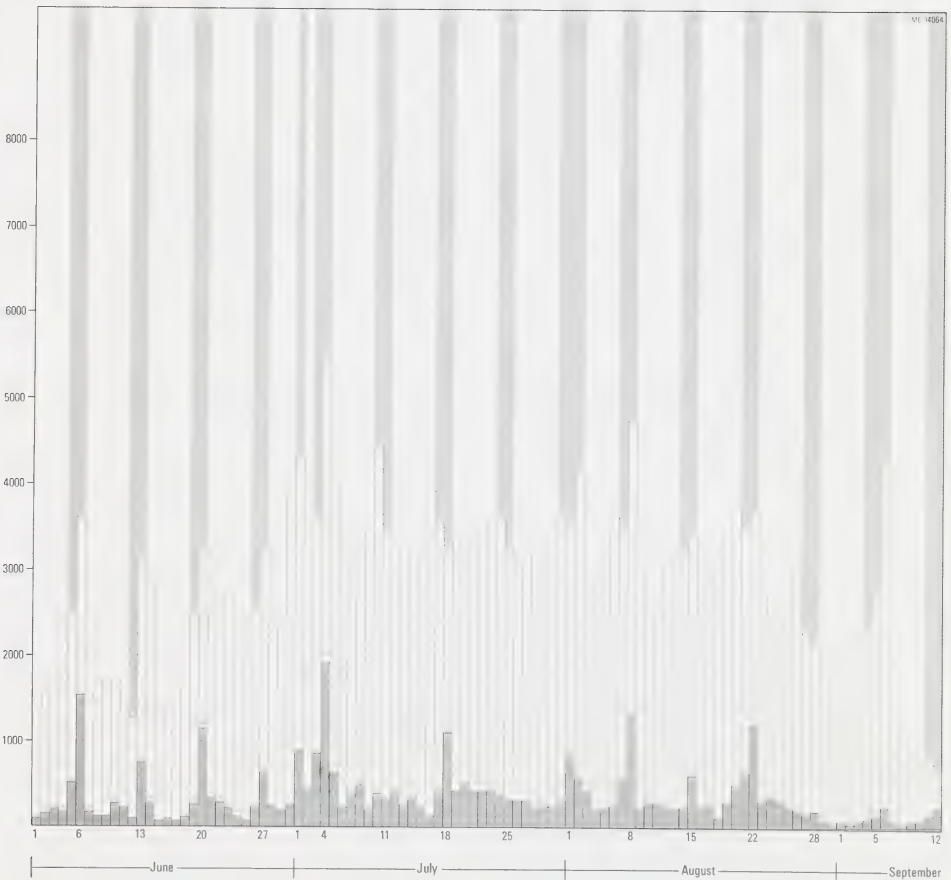
Figure 18

Day-use Visitation, Summer 1976

Number of day-users
without permits

Number of day-users
with permits

Weekend and statutory
holiday



Market Analysis

The Park in Context

To assess demand in a meaningful way, it is necessary to look at factors outside the park. The preceding section considered the levels of use and the trends associated with various uses in the park and provided an insight into the park's existing function, user preferences, satisfactions and immediate needs or demands. Although this level of analysis is important, particularly in the short term, it provides only a superficial indication of demand which is largely a function of forces external to the park.

The following market analysis considers criteria to which park visitation should respond directly giving indications of user demands. An examination of regional population and their projections will indicate from where the park can expect to attract its users in the future. Other information influencing the park's market includes alternative recreational supply opportunities available in the Thunder Bay area and the overall recreational participation rates.

Regional Population

The present population of the Lakehead Planning Area, which centres on Thunder Bay, is approximately 110,000. Because of low population densities in outlying areas, this figure reasonably approximates the total population of Thunder Bay and its vicinity. The official plan for the Lakehead Planning Area projects population of about 150,000 by 1986.

The park's location near the Thunder Bay population centre (there is approximately 30 km between the park and the built-up portion of the city) means that the projected population increase of 35-40 percent is most relevant to future demands for day-use opportunities in the park, particularly intensive day-use opportunities. As previously noted the residents in Thunder Bay and its vicinity represent almost 70 percent of the permit-holding day-users. They are the primary users of the beach-picnicking area. Consequently, as the population of Thunder Bay grows, generally, so will the demands for day-use opportunities within the park.

Highway travellers constitute the second population group examined for an indication of future demand. Future growth trends of this population are most relevant to the demands for camping and viewing opportunities at the falls. At present highway travellers account for almost 85 percent of both car campers and non-permit day-users viewing the falls. Highway travellers gain access to the Thunder Bay area and Kakabeka Falls via two major routes, Highway 11-17 or the Trans Canada running east-west and Highway 61 running southwest to the United States border.

Since tourist traffic accounts for a relatively high proportion of the volume of traffic on these highways, particularly in summer months, the volumes are indicative of demands on the park, particularly for viewing and camping. The average annual increase in traffic volume past the park for the 12 years since 1960 was approximately 35 percent. However, for the last five years of that period, the corresponding increases amounted to only 3.6 percent per year. Over the summer of 1973, an average of approximately 6,000 vehicles were recorded passing the park entrance daily (Ministry of Transportation and Communication, 1973). This figure is projected to reach 10,000 by 1990. On Highway 61 since 1966, the volume of traffic has increased annually by approximately 20 percent with Canadian traffic decreasing by 38 percent and American traffic increasing by 95 percent. Much of this American increase is accounted for in the years from 1966 to 1968. Highway 61 volumes have fluctuated substantially from year to year.

A proposed rerouting of Highway 11-17 either to the north or south of Kakabeka Falls Provincial Park is presently in the planning stages. It would be reasonable to expect that this development, which could be initiated as early as 1985, could result in a reduction in park visitation particularly in the number of viewers to the falls. The actual degree of reduction would be responsive to access opportunities and the proximity of the new highway to the park.

Recreational Participation

Recreational participation rates indicate those activities which are most popular among recreationists. Table 11 provides estimates of the percentage of Ontario residents who participate in various types of recreational activities. It is evident that for activities indicated in Table 11, the participation rates for those activities which are available at Kakabeka Falls Provincial Park are high. As indicated in the provincial survey, swimming and picnicking rank first and third with participation rates of 64.9 percent and 58.1 percent, respectively (Table 11). Camping, with a participation rate of almost 28 percent, also ranks relatively high.

Participation rates for selected activities by the large urban populations in Northern Ontario are generally similar to corresponding rates for the province, with swimming and picnicking remaining the dominant activities (Table 12). The significant variations which do occur appear to reflect variations in opportunity.

In general, participation rates have been on the increase in recent decades in response to a variety of factors: increasing populations, increasing leisure time, increasing incomes and the increasing availability of capital funding for facilities. Within this overall increase, changes in participation rates have varied among activities (Table 13). Again, activities for which opportunities are supplied at Kakabeka Falls may be singled out. It appears that participation rates are increasing for such activities as tent-camping, snowmobiling, picnicking and swimming. Considering their established popularity, the demand for intensive day-use and car camping

Table 11: Recreational Participation of Ontario Residents

<u>Activity</u>	<u>Percentage</u>	<u>Activity</u>	<u>Percentage</u>
Swimming	64.9	Baseball, softball	19.5
Recreational driving	64.0	Recreational snowmobiling	18.4
Picnicking	58.1	Alley bowling	16.4
Attending annually scheduled fair or other special event	53.7	Canoeing	16.2
Recreational walking	51.7	Golfing	13.9
Attending a spectator sport	50.9	View or photograph birds, animals or fish	13.6
Visiting recreation home	46.3	Ice hockey	12.9
Attending live theatre or concert	38.5	Tennis	12.2
Fishing	37.6	Badminton	11.6
Visiting a museum or art gallery	35.3	Other boating	10.7
Visiting zoo or botanical garden	34.8	Basketball	10.5
Visiting a developed historic site or display	34.5	View, photograph or collect plants	10.2
Motor boating	33.1	Waterskiing	9.9
Ice skating	30.6	Horseback riding	9.6
Recreational bicycling	30.5	Football	9.4
Visiting other nature displays	29.9	Volleyball	9.1
Camping	27.6	Small game hunting	8.9
Hiking	21.9	View, photograph or collect rocks	8.7
Tobogganing or sledding	21.0	Downhill snowskiing	8.1
		Soccer	7.7
		Going on a guided nature tour	6.0

Source: Ontario Recreation Survey Progress Report No. 2,
 Tourism and Outdoor Recreation Planning Study Committee,
 September, 1974.

Table 12: Participation by Northern Ontario Residents
in Outdoor Recreation

<u>Activity</u>	<u>Percentage</u>
Swimming	64.9
Picnicking	56.7
Fishing	45.4
Motor boating	43.6
Camping	32.1

Source: Ontario Recreation Survey Progress Report No. 2,
Tourism and Outdoor Recreation Planning Study
Committee, September, 1974.

Table 13: Trends in Participation in Outdoor Recreation
(Survey of Ontario residents 18 years of age and over)

<u>Activity</u>	<u>Percentage</u> <u>1967</u>	<u>Percentage</u> <u>1969</u>	<u>Percentage</u> <u>1972</u>
Tent-camping	13	10	19
Trailer-camping	6	4	10
Hunting	12	10	8
Power boating	19	23	23
Canoeing	8	10	11
Walking or hiking	--	39	38
Snowskiing	6	9	6
Snowmobiling	6	10	17
Picnics or cookouts			
away from home	44	56	56
Swimming	47	53	--

Source: Trends in Participation in Outdoor Recreation Activities,
CORD Technical Note No. 22, August, 1973.

Table 14: Projected Participation in Outdoor Recreation

	<u>1972</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>
Driving for pleasure	11.2	12.1	13.2	14.2
Sight-seeing	6.6	7.2	8.1	8.8
Visiting historic sites	6.6	7.2	8.0	8.6
Hiking and walking	7.7	8.6	9.3	9.9
Bicycling	7.1	7.6	8.2	8.6
Cross-country skiing	.5	1.0	--*	--*
Snowmobiling	3.7	4.0	4.2	4.4
Camping				
Tent-camping	3.9	4.2	4.5	4.7
Trailer-camping	1.9	2.1	2.4	2.6
Pick-up camping	.6	.7	.8	.9
Swimming and picnicking**	--	--	--	--

* No projection provided

** Swimming and picnicking participation rates have reached their saturation rates but are expected to increase in proportion to population.

Source: Projections of Participation - Outdoor Recreation. Draft Report, Parks Canada, Ottawa, 1976.

opportunities should be expected to increase at Kakabeka Falls if past and present trends continue.

Although not indicated in the accompanying tables, among Ontario residents in recent years there has been a dramatic upsurge in interest and, consequently, participation in linear recreational activities such as hiking and cross-country skiing. The impact of this phenomena on the park is expected to be substantial, given the suitability of its resource base to support such activities as well as its proximity to Thunder Bay. Already, even without the specific development of facilities for such activities, the park is experiencing major annual increases in such uses.

Recently, more information on participation projections for selected outdoor recreational activities has been compiled by Parks Canada (1976). The projections, based on available data on the socio-economic structure of Canada's population as well as past trends in participation, attempt to provide some insight into recreational participation up until 1985 (Table 14). Again these projections suggest there will be increases in activities for which Kakabeka Falls does and can supply additional opportunities, most notably camping and linear recreation.

Regional Recreational Opportunities


















The Thunder Bay area possesses one of the finest resource bases for the supply of recreational opportunities in the province. Perhaps most outstanding are the scenic Lake Superior shoreline on which the city is situated and the expanse of Crown land lying to the north and west. These backcountry areas, accessible from the city with relative ease, provide opportunities for a wide variety of activities such as hunting, fishing, canoeing, trail-biking, hiking, power boating, snowmobiling, cross-country skiing and many more (Figure 19).

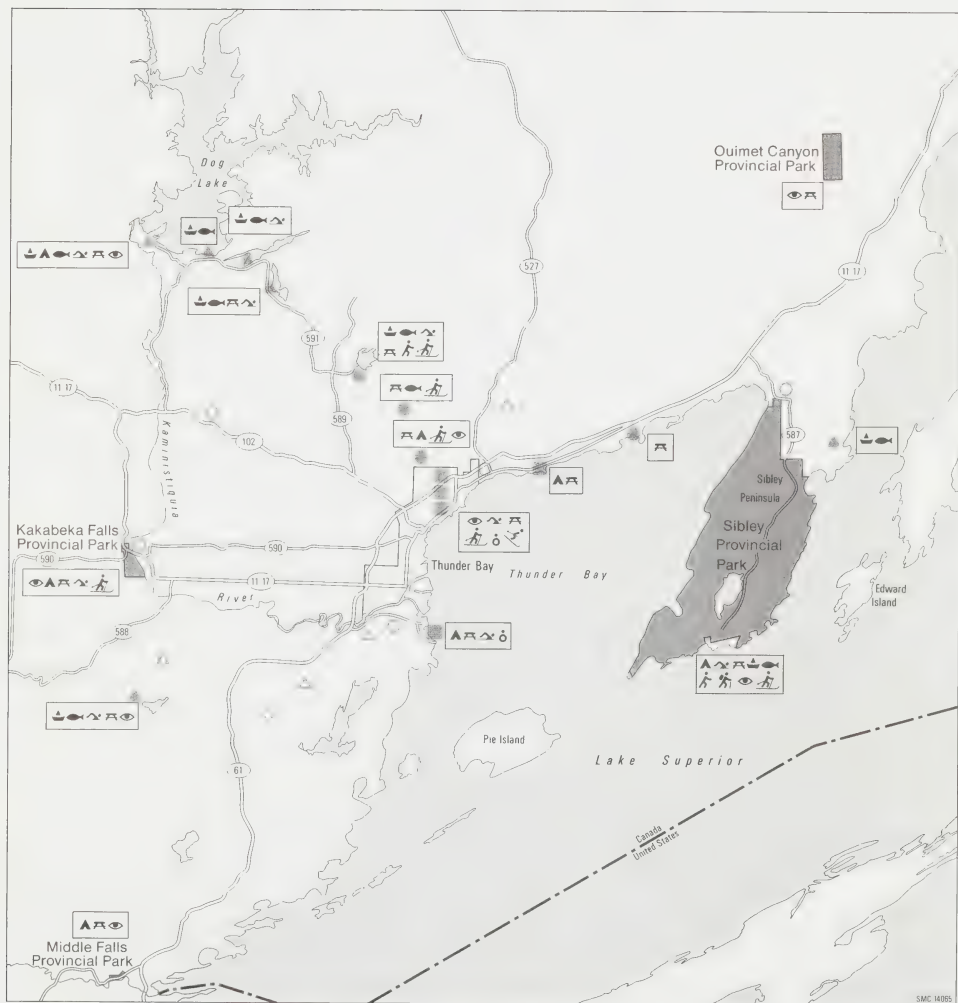
Despite this general abundance of regional outdoor recreational opportunities, relative shortages are apparent for certain activities. The most notable shortage is in the supply of public day-use opportunities in general and of swimming and sunbathing opportunities in particular. To begin with, Thunder Bay's cool northern climate allows only a short swimming season at best. In addition, areas located on or immediately adjacent to Lake Superior are subject to cool on-shore winds. Lake Superior, itself, due to cool summer water temperatures, provides only limited swimming opportunities. Consequently, the most comfortable swimming opportunities are situated inland, away from Lake Superior's cooling influence.

Only four major public swimming areas are available to Thunder Bay area residents: Boulevard Lake, Chippewa Park, Lake Marie Louise and Kakabeka Falls. Boulevard Lake, a reservoir on the Current River, is the most popular of the four, and as a result, its two major beaches are frequently overcrowded. Chippewa Park, the second major near-urban swimming area, is situated on Lake Superior and is generally used by only the hardiest of swimmers, except on the warmest summer days. Lake Marie Louise, found within Sibley Provincial Park, provides an

Figure 19

Regional Opportunities for Outdoor Recreation

	Provincial park		Boating		Long distance hiking
	Access points (Crown land)		Fishing		Scenic viewing
	Conservation area		Camping		Alpine skiing
	Municipal park		Picnicking		Cross-country skiing
	Private campground		Swimming, sunbathing		Other intensive activity
	Alpine ski resort		Nature hiking		



0 5 10 20 40 km



attractive alternative; however, it is located over one hour's drive from the city and, consequently, lies at the fringe of the Thunder Bay's day-use market area. Finally, Kakabeka Falls, a one-half hour drive inland from the city, provides perhaps the most desirable opportunity of all. As demonstrated previously, its popularity among Thunder Bay residents is reflected in relatively high levels of use. Unfortunately, on peak weekends, use is at full capacity. In addition to the above four major swimming areas there are numerous other opportunities; however, these are generally not easily reached and have low capacities.

A second opportunity shortage exists, however, not to local residents but to the car camper travelling Highway 11-17 west of Thunder Bay. Campground opportunities are limited. Along this segment of the highway, campgrounds at Kakabeka Falls Provincial Park and Inwood, the next provincial park west of Kakabeka Falls, are used to capacity during the summer months illustrating that the shortage exists.

Synthesis of Resource Potential and Recreational Demand

The preceding inventory and analysis have dissected and identified the essential components of the park. This constitutes a detailed and comprehensive yet highly segmented data base which must be synthesized in order to be employed in the formulation of policies for the park. This synthesis is accomplished through the discussion of parkwide potentials, problems and issues and also, through the identification of sectors of the park which exhibit some degree of internal homogeneity. The following are considered to be the potentials, problems and issues which are significant to the very essence of Kakabeka Falls Provincial Park.

Potentials, Problems and Issues

The Falls and the Viewing Opportunity

Kakabeka Falls is the most important element with the park and constituted the basis for the establishment of the park. Despite the subsequent diversification of recreational opportunities, the falls remain the park's primary attraction. Unfortunately, in the context of recreational viewing, the falls are also very important to the generation of hydro-electricity. A definite degree of incompatibility exists between these two principal uses because the diversion of water through the generating station detracts from the viewing opportunity available at the falls and, conversely, water allowed to flow freely over the falls is unavailable for the generation of hydro-electricity.

Currently, to ensure a minimum viewing standard, a rate of flow ranging from approximately 150 to 300 cfs (cubic feet per second) or 4.25 cms to 8.5 cms (cubic metres per second) is maintained throughout the daylight hours of the park's operating season. Until recently, when the upstream river bed was modified, the rate of flow resulted in water flowing over the falls' eastern face only, while the western face remained dry. Modification of the stream bed has resulted in a thin curtain of water being spread uniformly across the entire width of the falls. Greater rates of flow, in excess of 425 cms, may be observed but only during periods of high runoff when flows, surplus to the needs of the generating station and the capacity of its reservoir, are experienced. Normally, these rates of flow occur prior to the park's operating season. Consequently, the viewing experience provided by the "Niagara of the North" frequently results in disappointment to the park visitor.

In order to ensure a quality viewing experience, it is necessary to formalize an agreement which will optimize the viewing opportunity while not compromising the objectives of Ontario Hydro. The alternatives for this agreement range from maintaining the existing agreement to providing higher volumes and compensating Ontario Hydro for its losses to physically altering the river bed in order to provide a more evenly-distributed and visually-attractive pattern of flow at the face of the falls. Probably the most satisfactory solution represents some combination of the above.

Although the falls undoubtedly constitutes the park's primary attraction, viewing need not be restricted to the falls and its immediate gorge. Many of the park's undeveloped sectors, particularly its southern sector, provide a wide variety of quality viewing opportunities ranging from scenic vistas and features to visually-pleasing park landscapes.

Park Visitor Services

Intimately associated with the viewing opportunity is the interpretation to the viewer of the features or elements being observed. Despite a high potential for interpretation and education resulting from the combined quality of the park's resources (i.e., the structure of the falls, the geomorphology of the spillway-gorge complex, the historical use of the Kaministiquia River, the geological contact, the microfossils, etc.) and their relative accessibility to concentrations of population (i.e., Thunder Bay and the Highway 11-17 corridor), the park operates without a formal visitor services program. A vivid illustration of the current demand for the interpretation of the park's most outstanding feature, the falls, is provided by the fact that 200,000 to 300,000 viewers have entered the park in recent years, solely to view the falls. Their short length of stay, averaging 20 minutes, is at least partially indicative of the absence of opportunities available in association with viewing. Given the implicit educational objectives of the Ontario Provincial Park System, these visitors, as the park's principle user group, are being shortchanged.

There are abundant opportunities for interpretation throughout the remainder of the park. These opportunities are most suitably oriented to the long-term viewer, in general, and, perhaps more particularly, to the educational user.

Falls Area Traffic Circulation

Currently, given the high levels of traffic in the immediate vicinity of the falls and the high potential of the park area to be the primary visitor services target point, the circulation of traffic throughout the viewing area at the falls becomes a critical consideration. The existing situation, with free parking for viewing only being provided in the eastern viewing area and day-use permits being required for vehicular access to the western viewing area, results in congestion in the 96-car eastern parking lot, minimal use of the 191-car western parking lot and heavy pedestrian use and congestion on the park bridge which connects these two areas. With facilities and vehicular and pedestrian circulation patterns as they exist currently, only a marginal increase in the number of viewers can be accommodated.

Given the combined site constraints to the further development of the eastern viewing area and the variety of potentials in the western viewing area for viewing, interpretation and development and its suitability as the location of a major centralized visitor services facility, the western site represents the only viable alternative. However, should such a development be undertaken,

fundamental changes in circulation patterns would be required. If present facilities and patterns were maintained, an optimal experience could not be provided because of the effective separation of the user from the opportunity. In addition, an inequitable use of facilities would tend to result in an increased demand for parking in the eastern viewing area which would far exceed its design capacity leaving the larger western parking lot under-utilized. Finally, the visitors parking in the western viewing area would be faced with having to pay for the identical experience to that accessible by foot from the eastern viewing area but free of charge. Therefore, a solution is necessary to facilitate the upgrading of the viewing and interpretive experience in the immediate vicinity of the falls, particularly in association with the western viewing area.

Picnicking and Swimming

The location of the park, approximately 30 km west of Thunder Bay and the quality of the Highway 11-17 corridor linking the city to the park, make Kakabeka Falls a popular destination among the area's day-users. Accentuating the park's importance in this regard is the relative shortage of comparable opportunities within the vicinity of Thunder Bay.

As a popular day-user destination, the park's main swimming beach and its associated picnic area are used to capacity on warm summer weekend days. The swimming beach, artificially developed and maintained with considerable effort, is presently developed to its fullest extent. Expansion of the adjacent picnic area would potentially eliminate valuable vegetative buffering and encourage the overloading of the already fully-utilized swimming beach.

Throughout the remainder of the park there is both the demand and the opportunity for the development of additional picnicking opportunities. In particular, should the viewers of the falls be encouraged to cross to the western viewing area and their length of stay be increased, it is reasonable to expect that a substantial demand for picnicking opportunities may be created.

Car Camping

The park's location on the Highway 11-17 corridor is the major factor contributing to the high occupancy rate of its campgrounds. This is illustrated by the fact that for the past several years, during July and August, demand has exceeded supply. There is only a limited opportunity for an expansion of the camping opportunities within the park in order to satisfy the excess demand. Developable areas, adjacent to the upper campground, will allow for an expansion of opportunities ranging from approximately 100 to 250 sites depending upon the density standard employed and the identification of additional constraints during the site design stage.

The difficulty of meeting the surplus demand for camping opportunities and the limited possibilities for campground expansion are compounded by the constraints associated with the lower campground.

Here, some 70 sites are sandwiched on the side of a hill between two highways, the river and the western viewing area. In addition, with a substantial increase in viewing and interpretation facilities in the western viewing area, the existing sites of the lower campground may become an important base for activities associated with day-uses (i.e., picnicking).

Additional Park Potential

Traditionally, park user activity has been concentrated in the northern sector of the park in the vicinity of the falls, the nearby beach-picnicking area and the car campground. The remainder of the park has been left undeveloped and consequently, receives limited use. As revealed in the environmental analysis, the southern sector of the park, with the exception of several abandoned farm fields in the extreme south, has little potential to provide intensive recreational opportunities; however, it does have substantial potential to provide extensive opportunities. In addition, both the visual quality and interpretive potential of the area are high. Consequently, this southern area forms an ideal base for hiking, viewing, photography and nature study.

The Park and Surrounding Area

In its setting, the park is intimately associated with its surrounding area to the extent that adjacent land uses strongly influence internal park management options. The most notable influence is the hydro development; the impact of controlled waterflow over the falls represents a crucial problem from the standpoint of the park. In addition, the concentration of development, the hydro flumes, the highways and the bridges impose strong limitations on park development alternatives and on the general aesthetics of the park.

Park Sectors

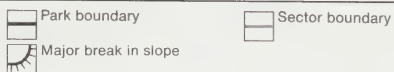
In an attempt to synthesize information about the park, it is important to view the area in a spatial context. An attempt has been made to delineate and describe internally homogeneous sectors of the park (Figure 20). Major parameters considered included the recreational, educational and aesthetic values, present use and development, physical constraints of the site to use and associated development and internal park accessibility.

Eastern Outcrop

Sparsely vegetated with jack pine and bordered on the west by the cascading Kaministiquia River, the eastern outcrop forms an interesting and visually-attractive unit. Potentially, its southern perimeter, where granites come into obvious contact with overlying sedimentary rock and ancient micro fossils can be found nearby, constitutes the basis for two major interpretive park themes. Physiographically this sector possesses major constraints to intensive

Figure 20

Park Sectors



SMC 10106



use but only moderate constraints to extensive use. Presently undeveloped, except for a hydro line in its northeastern corner, this sector is popular among recreationists who were concentrated in the adjacent intensively-used beach-picnicking area and find this area to be refreshing, offering alternative opportunities for casual walking, sunbathing and wading.

Western Outcrop

The western outcrop, situated west of the Kaministiquia River and east of Highway 11-17, is not accessible from the remainder of the park. Although the granite outcrop dominates, its southern portions are composed of a thin layer of glacial till and a narrow alluvial flood plain, respectively. Throughout the sector, constraints to intensive use vary from extreme to major, while constraints to extensive use are generally moderate. Both its physiography and its vegetative covering combine to provide an effective buffer, separating Highway 11-17 from the beach-picnicking area.

Beach-Picnic Area

The beach-picnic area is popular among Thunder Bay area residents as a swimming, sunbathing and picnicking destination. It is being used to capacity on several warm summer weekends each operating season. Despite this rather obvious demand based pressure for expansion, site constraints, the lack of additional available area and the buffering role of its covering vegetation offer little opportunity for additional development. Physiographic constraints are moderate and minor for intensive and extensive uses, respectively, primarily because of soil permeability and wetness. A paved road from the park entrance area provides convenient vehicular access to the beach-picnic area.

Northeastern Swamp

This sector extends from the beach-picnic area east to the park's boundary. Receiving heavy drainage from the adjacent hydro flumes and nearby uplands on its eastern margin, the unit presents major constraints to both intensive and extensive uses. Its vegetative cover buffers the nearby hydro flumes, railroad and highway.

Eastern Viewing Area

The eastern viewing area, containing the free viewing parking lot and the park entrance, is the park's most heavily-used sector. Used to capacity on warm summer weekends when the visits of residents and tourists combine, visitation remains heavy throughout the operating season and steady at low levels throughout the year. Although the falls is the obvious focal point, a variety of quality viewing opportunities are provided by the main gorge, extending southward from the falls and by vistas of the surrounding countryside. In addition, although undeveloped, there is potential for geological and historical interpretation. Unfortunately, the site, a moderately capable one, offers no effective opportunity of the expansion beyond the existing

level of development.

Western Viewing Area

The western viewing area is relatively developed and contains a parking lot for approximately 200 cars, the former site of Greenmantle Tower, the lower campground with 71 campsites and the park's maintenance compound. Its greatest potential is for viewing, interpretation and education because it offers views of the falls which are superior to those of the eastern viewing area and because it is situated on the historic Mountain Portage. Fortunately, the area is capable of supporting some degree of additional development. The lower campground, however, is sandwiched between Highway 590, Highway 11-17, the river and the viewing area and provides somewhat less than an ideal camping experience, yet it is filled to capacity throughout July and August.

Northwestern Slope

The northwestern slope, situated adjacent to the park's western boundary, is isolated from the remainder of the park by Highway 590 and Highway 11-17. Site constraints, primarily related to the slope, vary from major to extreme and from minor to major for intensive and extensive uses, respectively. An experimental tree plantation, utilized at the present, is located in the central portion of this sector. This undeveloped and fully vegetated sector of the park serves as the background landscape to the viewing from the beach-picnic area.

Gorge and Valley

Currently, the portion of the gorge and valley lying within the park boundary contains no development. It is an area of high visual and interpretive value. Apart from the main gorge immediately below the falls, this area's most outstanding segment is the western gorge; a formation of particularly high visual quality and geomorphological interest containing the site of the southern terminus of Mountain Portage. Capabilities for use and associated developments are low with constraints ranging from major to extreme for intensive uses and from moderate to major for extensive uses. The only form of access feasible for this sector of the park is a trail.

River Terraces

This sector incorporates a series of easterly-sloping, former river terraces which parallel, approximately, the western bank of the Kaministiquia River. In addition to being one of the park's most important interpretive and educational resources, these terraced slopes also serve as an excellent background landscape to view from elsewhere, particularly from the viewing area east of the falls. Also, fine views of the surrounding countryside are available from the upper terraces. However, the steep slopes of the terraces present extreme to major constraints to both intensive and extensive use.

Incised Slopes

This sector, southeast of the upper campground, has no development with the exception of a short scenic trail. Its forested ridges are of high visual quality and provide some excellent vistas of the surrounding countryside. In addition, in an interpretive and educational context, the incised slopes are of significant geomorphological interest. Largely due to the sloped steepness and the wetness of the associated lowlands, physiographic constraints are major and moderate for intensive and extensive uses, respectively.

Upper Campground Flatland

This sector presently has a campground containing 85 campsites which are used to capacity throughout July and August. The adjacent flatland, providing only minor constraints to both intensive and extensive uses, is ideally suitable for campground expansion. The area is surrounded by a 4.6-km long yet narrow, scenic trail and is reached by a main park road.

Beaver Community

The beaver community, situated in the southern portion of the park, is well-removed from existing park development. Evidence of current and past beaver activity in the form of dams, lodges, meadows, felled trees, etc. provide quality interpretive opportunities. Physiographic constraints are considered to be extreme for both intensive and extensive uses.

Southwestern Swamp

This is a low and wet unit lying adjacent to the park's western boundary and southwest of the upper campground flatland. It is low in aesthetic and interpretive value. Largely a result of its wetness, site constraints are considered to be extreme and major for intensive and extensive uses, respectively. An access road linking the group camping area to the upper campground passes through its western margin.

Western Field

The western field, situated in the park's southwestern corner, is currently utilized as the park's group camping area. Only minor site constraints are evident for both intensive and extensive uses. Presently, the western field is serviced by a single lane dirt road from the upper campground.

Eastern Field

A series of abandoned farm fields in the southeastern portion of the park creates in the eastern field an enclosed landscape of high visual quality. In addition, from its higher knolls there are vistas of the surrounding countryside. Site constraints are minor for both intensive and extensive uses. Currently, an old farm road provides foot access from the western field.

Park Policy

Park Classification

The most appropriate classification for Kakabeka Falls is not easily determined. The preceding inventory, analysis and synthesis reveals that the park's qualities relate to both the recreation and the natural environment classifications of the Ontario Provincial Park Classification System (Ministry of Natural Resources, 1977). Conceptually, if a continuum were to exist with characteristics typical of the recreation and the natural environment classifications at either end, then Kakabeka Falls might lie somewhere near the midpoint of this continuum. Therefore, it is a matter of relating the data on potential user demands and resource capabilities to the broad policies of the two classifications in order to determine the more appropriate classification.

Although Kakabeka Falls Provincial Park has been classified as a natural environment park since 1967, essentially it has been managed as a recreation park. A relatively small portion of its total area has been developed for viewing, swimming, picnicking and camping while the remainder has been largely ignored. As a result, the park has served as a near-urban day-use facility for the residents of Thunder Bay and vicinity, and has served as an important viewing and car camping opportunity for the tourists to the region. Despite its established role as a supplier of relatively intensive outdoor recreational opportunities, the potential of the park for such use is limited. The swimming beach, which is artificial and maintained with considerable effort, is currently used to capacity and offers no effective opportunity for expansion. Similarly, there is only limited potential to expand existing car camping opportunities for which demand currently exceeds supply.

The park's undeveloped potential supports the natural environment park classification. Its resources, particularly its earth science features and the process which these reflect, are significant as important contributions to the preservation objective of the Ontario Provincial Park System. Perhaps of greatest importance is the potential within the park's resource base for interpretation. In addition, the southern sector of the park is well-suited to the provision of a wide variety of quality extensive recreational opportunities. However, some existing uses and developments such as the controlled waterfall over the falls, the artificial swimming beach and the relative congestion of the existing internal park and adjacent development are not truly compatible with the objectives of the natural environment classification.

Overall, the choice is a difficult one. The potential opportunities for the park are decidedly resource oriented, both in the context of

preservation, interpretation and education and in the context of outdoor recreation. Furthermore, although demand pressure's exist, site constraints prevent the substantial expansion of intensive recreational opportunities beyond the present level. Therefore, in order to achieve the greatest benefits from the park while maintaining the integrity of it's resource base, Kakabeka Falls Provincial Park will be classified and managed as a natural environment park.

Park Goal

Goal

To provide, within the capabilities of the resource base, quality recreational and educational experiences which are based upon the outstanding resources of the park and to maintain the park's established role as a near-urban day-use and corridor camping facility.

Statement Explaining Goal

The recreational opportunities traditionally supplied at Kakabeka Falls, which include viewing, swimming, picnicking and car camping, will be continued. However, the emphasis of the park will be altered substantially through the development of a visitor services program oriented to viewing, interpretation and education and through the diversification of recreational opportunities.

In stressing the park's resources, the goal indicates a decided reorientation of park programs. Attention will be increasingly focused on the viewers of the falls, the park's principle user group. Viewing opportunities will be improved and diversified and quality interpretive and educational programs will be developed in association with the falls and its gorge, the park's most outstanding natural attraction. Overall, the quality of the experience provided in association with the viewing will be improved.

Although the falls will remain the park's focal point, an increase in the recreational and educational use of the remainder of the park will be encouraged. The visitor services program will be oriented toward interpretation and education in addressing themes derived from the park's physical and cultural resources. In terms of recreation, additional opportunities will be provided for both summer and winter extensive recreational activities. Such activities will be non-mechanized and compatible with the resource-oriented experience package of viewing, interpretation and education to be provided within the park.

With regard to the traditional and relatively intensive uses of the park, the existing level of picnicking, swimming and car camping opportunities will be maintained at the established sites. Some level of redevelopment or expansion may be undertaken where it is warranted by demand, desirable in recognition of site constraints and compatible with viewing, interpretation and education.

Park Objectives and Strategies

The objectives and strategies outlined below attempt to focus upon major policy-related issues relevant on a park-wide scale. They attempt to provide specific direction to subsequent program and site planning, facility development and park operations. Where possible the objectives have been quantified. Where quantification cannot be achieved, every attempt has been made to state the objective in the most explicit terms possible. Where the level of detail becomes too fine, quantification may be attempted elsewhere in the plan and oriented specifically to subsequent levels of planning, development and operations.

Natural and Cultural Resource

To maintain the integrity of the park's resource base and to utilize both its natural and cultural components as central elements of the park's viewing, interpretive and educational programs.

As outlined in the preceding section, the reorientation of park programs to provide increased and improved viewing, interpretive and educational opportunities emphasizes the importance of the park's resource base. Consequently, it is important that resource management programs be geared toward maintaining the integrity of the natural and cultural resources that sustain these opportunities.

Apart from the falls (considered individually in the following section), the principle natural resources requiring specific management include vegetation and wildlife. Specifically, the park's vegetation may be managed for recreational purposes (i.e., buffering, viewing, etc.), or it may be managed to provide satisfactory habitats for wildlife species of particular educational importance, principally, the beaver and the deer. Similarly, direct management of the park's wildlife populations may be undertaken to maintain their existence within the park as valuable resources for educational and recreational purposes (i.e., viewing, photography, etc.).

Cultural resources will be treated somewhat differently. Archaeological sites will be protected and preserved initially and, ultimately, will be excavated to add valuable resource information to the park's interpretive and educational programs. Such archaeological research projects will be intergrated into the park's visitor services program where possible.

Viewing and the Falls

To provide a wide variety of quality viewing opportunities, ranging from fully developed and highly accessible overlooks and viewpoints in the immediate vicinity of the falls to scenic features, viewpoints and aesthetically pleasing and interesting landscapes in the interior of the park accessible by trail only.

To optimize the viewing opportunity available at the falls while maintaining the integrity of the natural feature and recognizing the constraints imposed by the objectives associated with the generation of hydro-electricity.

Viewing will constitute the principle activity for visitors to Kakabeka Falls Provincial Park. While the falls will remain the primary attraction, viewers will be encouraged to travel farther afield; south from the falls to the western gorge in particular and into the park's southern sectors in general. The viewing opportunity will be enhanced through the development of a complementary park visitor services program.

Because of the importance of the falls to the essence of the park, the Ontario Ministry of Natural Resources will seek to formalize an agreement with Ontario Hydro which allows a minimum flow of 4.25 cms (cubic metres per second) and 8.5 cms on weekdays and weekend days, respectively, during daylight hours. Close liaison will be maintained between the Ontario Ministry of Natural Resources and Ontario Hydro to ensure that the terms of the agreement are maintained and to identify possible modifications which would enhance the viewing opportunity.

In order to maximize the viewing opportunity in the immediate vicinity of the falls and the gorge and to achieve the necessary flexibility in the design and development of associated services and facilities, free entry will be provided to the viewers of the falls and, consequently, to all day-users. The viewers will then be encouraged to cross the river to the western viewing area where a high quality viewing opportunity and visitor services program will be provided.

Since all park users are potential viewers of the falls and the immediate gorge area, viewing facilities will be designed to accommodate the total number of park users. In recent years, total use throughout an operating season approached 400,000; on peak days it approached 10,000 and for peak periods of use during peak days it approached 1,000. To further qualify current figures, with the implementation of a free day-use policy and the development of additional viewing opportunities and a visitor services program, the length of stay of the viewer at the falls may be expected to increase substantially beyond the present average of 20 minutes. For example, should the length of stay be increased by a factor of three, the peak hourly load would be increased by a similar factor and, correspondingly, it would approach 3,000. However, an accurate estimate cannot reasonably be developed until the details of the visitor services program and associated facility designs are determined. With regard to viewing in the southern sector, the trail system will be taken to represent the design capacity for viewing, interpretation and related activities.

Visitor Services

To promote in park users an understanding of and appreciation for the natural and cultural values of the park through the provision of a wide variety of interpretive and educational opportunities tailored to the specific needs of individual user groups.

Of the four potential components of a park visitor services program, interpretation and education will be emphasized within Kakabeka

Falls Provincial Park. Generally, recreation programming, one of the two remaining visitor services program components, although it will occur to a limited extent, will not be encouraged. The treatment afforded the visitor services program's final component, communications, will be responsive to the informational requirements of the Kakabeka Falls user.

The major focus of the visitor services program will be to increase the visitor's appreciation of the waterfalls by presenting it as the central focus of a broader story that includes the geology, geomorphology and human history associated with the falls (Figure 21). Within this guiding concept, the program's interpretation and education components will employ two major themes to emphasize the importance of the park's earth science resources. The first will present the story of the falls in the context of the structural geology which maintains it, and the second will emphasize the de-glaciation of the west Superior Region of Northwestern Ontario as represented by the Kaministiquia spillway-gorge complex. Other important themes will relate the story of the geological contact and the microfossils and the role played by the Kaministiquia River as a fur trade route. Additional, but less significant themes will include general topics in park ecology, particularly the beaver and deer, plant succession and microclimate influences on vegetation.

Two basic approaches will be employed to interpret the above themes to the park user. The on-site interpretive approach will utilize the advantages of direct contact of the user and the resource to deliver the message. To facilitate this level of interpretation, target points identify the optimal location, both from the perspective of the resource and that of the user, at which to interpret the major park themes (Figure 22). Facilities provided in conjunction with target points will be a function of interpretive requirements, based on both the resource and the user and relevant zone management guidelines.

The second interpretive approach will focus upon the themes that are somewhat intangible and consequently not easily interpreted on-site. This approach will employ a central visitor services centre. An important function of the centre will be the interpretation of major park themes, regardless of their on-site interpretability, to park users whose relatively short length of stay effectively precludes access to resource-based target points. The visitor services centre will contain appropriate facilities for audio-visual presentations, displays, paintings, photographs, artifacts, etc. and visitor services program development and management.

Being intimately tied to the viewing opportunity, the interpretive program and its associated facilities will focus upon the falls and immediate gorge area. Here, where the visit of the traditional viewer to the falls is relatively short in duration but largely concentrated in one area, emphasis will be directed to the interpretation of the major themes of the park. Visitor services facilities in this area will be designed to accommodate the peak viewing load. The viewing area will contain the major interpretive target points, as well as the visitor services centre.

Interpretive Conceptual Theme

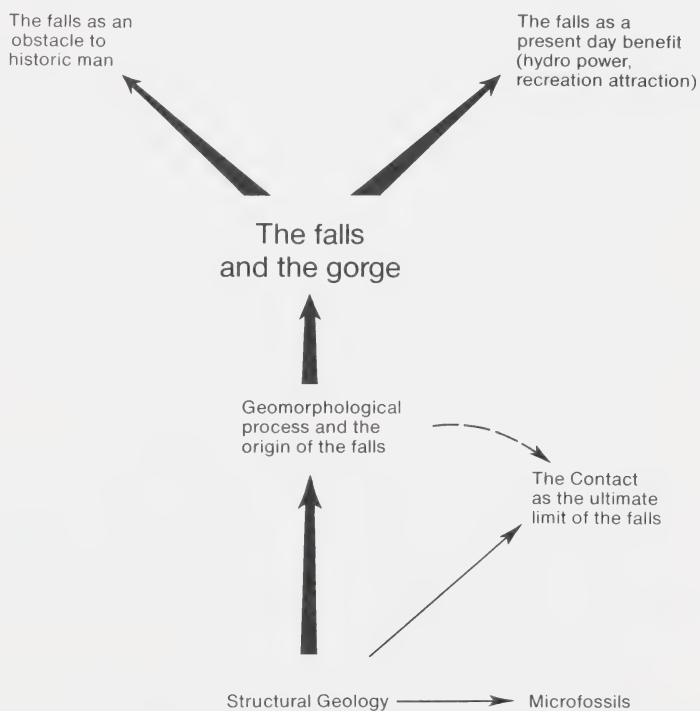
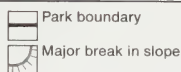
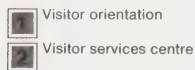


Figure 22

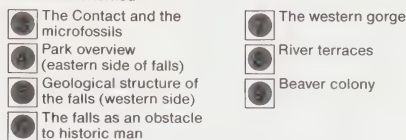
Visitor Services Target Points



User-oriented



Resource-oriented



0 100 250 500 1000 m



With regard to the recreational component of the visitor services program and in recognition of the park's substantial recreational role, some limited opportunities will be made available. However, such opportunities will be provided only in response to demand and to the extent that the overall interpretive and educational focus of the program is not compromised. Generally, recreational programs will relate to the park's natural environment classification and may include such activities and facilities as orienteering and adventure play areas. A secondary emphasis of the recreational programming at Kakabeka Falls will be for children.

As an essential element of all visitor services programs, communications is particularly important at Kakabeka Falls given the distinct and functional separation of major activity areas, the range of activities and the potential congestion problems of heavy use combined with complex vehicular and pedestrian circulation patterns.

Scientific Research

To encourage scientific research as a valuable input to the development of park management techniques and as a means of improving the information base of the park visitor services program.

Within the Ontario Provincial Park Policy, scientific research is recognized as a highly desirable park program. Care will be taken to ensure the integration of research projects and the visitor services program. In addition to informing the visitor of the purpose and value of visible research projects, wherever possible, the visitor services program will incorporate the project within its interpretive and educational components.

Swimming and Picnicking

To maintain the existing level of opportunity for swimming recognizing that swimming is a traditional park use and that there is a shortage in the supply of swimming opportunities in the vicinity of Thunder Bay.

To provide opportunities for picnicking in association with other recreational activities ranging from swimming to viewing and participation in the visitor services program to hiking.

Although a demonstrated demand exists for additional swimming opportunities, the status quo will be maintained because of the site constraints associated with the park's swimming area. Similarly, the picnicking opportunity associated with the swimming area will not be expanded.

Throughout the remainder of the park, picnicking opportunities will be diversified. Facilities will be developed in association with the viewing area for the falls to satisfy the demand generated by the free day-use policy. These facilities will be provided as they are required and will occupy a portion of the existing lower campground. In addition, the development of a trail network in the park's southern sector will service an alternative, walk-in picnicking opportunity.

Camping

To provide a quality camping opportunity for residents of Thunder Bay and vicinity and for travellers on the Highway 11-17 corridor.

In response to the demonstrated demand, existing camping opportunities will be expanded. However, in recognition of site development constraints, the obvious advantages of maintaining an economically efficient management unit and the desirability of minimizing contact and potential conflict between campers and day-users (i.e., park's primary user group), car camping opportunities will be provided in one distinct management unit - an expansion of the existing upper campgrounds. As a result of the considerable demand for camping opportunities combined with the limited developable area suitable for campground development, the park's campground will be developed to its capacity, utilizing the highest campsite density standard considered appropriate for a natural environment park. Finally, since basic changes in the composition of the car camping group presently utilizing the park are not anticipated, facilities and services will be designed in response to the needs already demonstrated by the existing campers.

This strategy, by assigning priority to the viewer of the falls and the visitor services program user in the viewing area, is in keeping with the intent of the park goal. The assumption inherent in the policy of isolating camping to an expanded upper campground area is that the increased day-use activity generated within the viewing area to the west of the falls will require a substantial proportion of the land base currently occupied by the lower campground area primarily for picnicking. Although this assumption is believed to be sound, it is emphasized that the promotion of the viewing, interpretive and educational opportunities of the falls constitute a dramatic re-orientation of the park programs and user activities and distribution. Consequently, estimates on the magnitude of the demand the viewing area users have for picnicking opportunities cannot be achieved precisely. Therefore, a phased implementation program will be developed emphasizing the careful monitoring of its impact on both the viewers of the falls and the campers. Should the demands of the viewers at the falls for picnicking fail to develop to the anticipated level and should the demands for camping opportunities grow to exceed the capacity of the expanded upper campground, camping opportunities may continue to be supplied within the lower campground area to the extent that they do not infringe upon the priority viewing-interpretive-educational opportunity provided in the viewing area at the falls.

Group camping opportunities will be provided for both recreational and educational users with an emphasis on the latter. Facilities associated with this opportunity will be simplistic and serve only to provide for the basic needs of the group camper. Because of the educational orientation, in particular, the group camping area will be integrated into the park's trail system thereby providing access to park resources of educational value. Keeping within the constraints associated with the site, demands for group camping opportunities will be met where possible.

Extensive Recreation

To provide within the park a significant alternative to the relatively intensive opportunities provided at the falls and the adjacent beach-picnicking and car camping areas.

The southern sector of the park will provide a variety of quality extensive recreational opportunities including hiking, snowshoeing, cross-country skiing, viewing, photography and nature study. The quantity of extensive recreational opportunities supplied will be based upon the capability of the resource base. A trails system will connect points of interest and, although recreational use will not be confined to the system, the trail mileage will effectively serve as the design capacity of the area.

The Park and the Surrounding Area

To maintain the integrity of the park resource base and the quality of the user's experience by minimizing the impact of external land uses and developments on the park's resource base and its users.

Wherever possible park development and user activity will be sited in interior locations. Where peripheral park development exists or is required, such development will be oriented away from external adjacent developments and buffered through the use of wise design practices. In instances where it is not possible to minimize impact as a result of internal action, park requirements will be represented to appropriate government agencies, municipalities, etc. to ensure that the park's values are not comprised.

Program Expansion and Park Development

To achieve a maximum degree of integration of new programs and developments with the existing park infrastructure and, where redevelopment is necessary, to utilize existing facilities for new park programs to the extent possible during the expansion of the recreational, interpretive and educational opportunities provided within the park.

In recognition of the constraints imposed on future park management alternatives by established park user patterns and associated ad hoc developments and of the capital investment involved in such developments, an attempt will be made to consider the park's existing use and development and its potential and demands comprehensively, thereby ensuring a fully integrated and efficient plan.

Zoning and Management Guidelines

Park Zoning

Kakabeka Falls will be managed under four zone designations: nature reserve, historical, natural environment and development. In all there will be nine separate zones of which five will be zoned as natural environment, two as nature reserve, one as historical and one development zone (Figure 23 - insert in back cover and Table 15). It is the aim of this particular arrangement of zones to provide a variety of quality recreational opportunities and interpretive and educational opportunities, each in harmony with the others, while maintaining the integrity of the resources upon which these opportunities are based. Essentially, this is the direction provided by the park goal.

Table 15: Park Zones

	<u>Number of Hectares</u>	<u>Percentage of Park Area</u>
Nature Reserve Zone		
Zone 1	196	47
Zone 2	<u>10</u>	<u>2</u>
(subtotal)	206	49
Historical Zone	8	2
Natural Environment Zone		
Northwestern Group		
Zone 1	12	3
Zone 2	28	7
Zone 3	<u>20</u>	<u>5</u>
(subtotal)	60	14
Northeastern Group		
Zone 4	31	8
Zone 5	<u>6</u>	<u>1</u>
(subtotal)	37	9
Development Zone	<u>105</u>	<u>25</u>
	416	100

Of the park's four zones, the nature reserve and the historical are resource-based. These zones have been established to ensure the preservation of and to facilitate the appropriate interpretation of specific significant biophysical and cultural resources.

The park's natural environment zones, although also resource-based, play a more general role in resource management than either the nature reserve zone or the historical zone. These zones have not been established to preserve specific features or processes of significance, but rather to ensure the maintenance of important natural landscapes (e.g., vegetative buffers and background landscapes) in their existing condition.

The development zone incorporates areas devoted to relatively intensive use and its associated development. It is within this zone that the majority of the users' needs will be met. Although emphasis is placed on the user, the biophysical and cultural resource base remains on underlying consideration. Many of this zone's facilities and services have been, or will be, developed to facilitate resource-based activities some of which are intensive (i.e., the viewing of the falls, the interpretation of the Mountain Portage) (Figure 23).

Nature Reserve Zone

Nature Reserve Zone One

Nature reserve zone one encompasses essentially the southern half of the park (Figure 23). It extends eastward to the shoreline of the Kaministiquia River and westward to the perimeter of the development associated with the upper campground and group camping areas. The zone's northern boundary is less precisely defined. In general, this is formed by the southern margin of the viewing area for the falls and the access road connecting the falls viewing area to the upper campgrounds. However, there are two notable exceptions to this northern boundary. In the first instance, the nature reserve zone extends northward up the gorge to the face of the falls. Here, the northern zone boundary is defined by the lip of the gorge. In the second instance, the park's historical zone protrudes southward from the viewing area to the floor of the western gorge (pg. 89).

The primary resources, protected through the establishment of this nature reserve zone include a variety of earth science features and associated processes related to the Kaministiquia River spillway-gorge complex. Most notable are Kakabeka Falls and its immediate gorge and the river terraces. Secondary resources of the zone include the scenic features of the remainder of the Kaministiquia River valley in particular and the southern sector of the park in general, as well as the wildlife population which it supports (i.e., principally, beaver and deer) and, finally, the zone's vegetation.

Resource Management

The integrity of the zone's primary resources, being highly durable by most indicators of resource fragility, is not generally dependent upon restrictive management policies. Consequently, extensive recreational use, emphasizing resource appreciation and interpretation, will be permitted with resource management policies which will ensure the protection of the resource by minimizing the impacts of use and associated development.

For the secondary resources of the zone, most notably wildlife, a substantially different set of resource management policies applies. If required to maintain viable populations and if feasible to implement within the park, an active wildlife management program would be considered compatible with the zone's objectives. However, the need for such a program is envisaged as being a long term one. For the short term, wildlife management will be restricted to acquiring more detailed knowledge of those wildlife populations that are present. As is the case with the earth science resources, protection will be afforded by controlling user activities, user distributions and associated development.

Recreational Opportunities

Although care must be taken to maintain the integrity of the zone's resources, it is also desirable to promote recreational use in order to maximize enjoyment and benefit derived from its particular values. Within this context, extensive recreational activities will be encouraged and will include, by way of example, hiking, snowshoeing, cross-country skiing, viewing, photography and nature study. Mechanized trail use (i.e., trail bikes, snowmobiles) will not be permitted. The park visitor services program will strive to ensure a quality experience through the distribution of orientation information and interpretive pamphlets prior to entry and the limited utilization of on-site, low profile, interpretive displays.

From an educational standpoint, park programs will facilitate instruction and learning in a natural setting. Educational programs will emphasize natural phenomena and processes. Themes developed will be based on geomorphological features, the presence and habitat requirements of the park's major wildlife species (i.e., the beaver and the deer) and general topics on park ecology. Educational recreational uses in the zones will be associated with two basic activity packages - a day hike originating at a park interpretive facility situated in the western falls viewing area and a longer term group camping educational opportunity based at a group camping area in the park's southwestern corner.

Development

The one major development within the zone will be a network of trails. The system will link nodes of recreational, interpretive and educational significance. The capability of the site and the internal locations of user groups requiring access to the various resources of the zone will represent additional criteria for trail alignment. Thus, the capacity of the system bears a direct relationship to the potentials and capabilities of the resource. The zone's primary trail alignment will be approximately 9.6 km in length.

Nature Reserve Zone Two

Nature reserve zone two incorporates two highly significant earth science features, the contact and the microfossils. The contact, although adjacent to the heavily-used beach-picnicking area, is

durable and does not require the degree of protection afforded by the nature reserve zone designation. In the case of the microfossils, although sensitive to sample collecting, the site's small size and relatively isolated location, results in a degree of natural protection. Consequently, however, the role of nature reserve zone two is primarily to highlight the significance of the incorporated resources, rather than to serve as a vehicle for the prescription of a detailed set of resource management guidelines. Generally, with the exception of the erection of an on-site interpretive display, management within the zone will be consistent with that applied in natural environment zone 4.

Historical Zone

The park's historical zone has been established to ensure that proper recognition is granted to the cultural resources of the park, particularly its most important historical element, the Mountain Portage. The zone is bounded in the north by the existing developments of the western viewing area of the falls and in the east by the main gorge. It extends south to the floor of the western gorge and west to incorporate the entire Mountain Portage to its southern terminus.

To a certain extent the historical zone may be conceptualized as being superimposed over a northern extension of the nature reserve zone incorporating the whole of the western gorge and a southern extension of the development zone (i.e., the western viewing area of the falls) which could have extended south to the northern edge of the western gorge. Thus, although unity is derived from the zone's internal historical values, there is also internal diversity resulting from the presence of important non-historical, recreational, interpretive and educational values and the extreme variation in the character of the biophysical base. Consequently, the management of the zone, while maintaining the integrity of the cultural resource, must also allow for the utilization of the zone's non-historical resources' potentials.

Resource Management

Resource management within the zone will emphasize its cultural resources. The park's major archaeological site, de Noyon's Landing, (DcJj-7) situated at the southern terminus of Mountain Portage, will be excavated and any unearthed artifacts will be displayed in the park's interpretive centre. Information gleaned from the excavation will be incorporated into the park's visitor services program. This excavation is particularly urgent due to the importance of the site and to the rather heavy erosion to which the site is subjected as a result of fluctuations of the Kaministiquia River. While underway, the excavation project itself will be integrated into the visitor services program where possible. In addition, archaeological field surveys will seek to determine, if possible, the exact alignment of Mountain Portage as prerequisite to its partial reconstruction.

Recreational Opportunities

User activities will vary within the zone. In addition to historical interpretation, the upland portion of the zone will contain relatively intensive viewing opportunities in association with the falls, the main gorge and the northern edge of the western gorge, and it will also contain geomorphological interpretation associated with the formation of both the main and western gorges. Within the western gorge itself, activities will be extensive and closely associated with those activities permitted within the adjacent nature reserve zone which incorporates the remainder of the western gorge. The southern terminus of Mountain Portage will constitute the focal point of the lowland sector of the zone.

Development

The historical zone's recreational development will consist of viewpoints, interpretive displays and a network of interconnecting trails. Recognizing the historical orientation of the zone, Mountain Portage will be reconstructed, if possible, to a condition and along an alignment which approximates that of the original route. The portage will extend from a point adjacent to the park's interpretive centre to its original southern terminus on the western bank of the Kaministiquia River.

The zone's major development, from the standpoint of recreational use, will be a walkway connecting the western viewing area of the falls and the interpretive centre with a series of viewpoints and interpretive target points and associated displays situated along the western perimeter of the main gorge and overlooking the northern wall of the western gorge.

Natural Environment Zone

Northwestern Group

Natural environment zones 1,2 and 3 are of 12 ha, 28 ha, and 25 ha, respectively, and occupy the northwestern corner of the park. These areas may effectively be considered as one but have been given separate designations solely as a result of the dissection of this sector by Highway 11-17 and Highway 590. With the exception of natural environment zone 1, the areas lie north of Highway 590 and Highway 11-17 and west of the Kaministiquia River. Natural environment zone 1, also situated west of the river, is bounded in the north and west by Highway 590 and in the east and south by the existing lower campground and the park road which provides access to the upper campground.

In all cases, these zones possess relatively low capabilities to sustain use and associated development and, except for natural environment zone 1, are not internally accessible from the remainder of the park. Their primary function is related to visual aesthetics and site protection. Natural environment zone 1 and natural environment zone 2, incorporating a steep eastfacing slope, serve as

an important background to the view from the beach-picnicking area and from the eastern viewing area. Natural environment zone 3, while serving a similar purpose, also buffers Highway 11-17 traffic from the beach-picnicking area.

Resource management policies will conform to those previously given in the park's goal and objectives. Although a need for immediate active management is not foreseen, any action undertaken will be aimed at maintaining the roles of the zones in this group as background landscapes and visual buffers. A research plantation now established in natural environment zone 2 will remain with close liaison between park and research staff to ensure that the park's objectives are not impaired. Recreational use will not be encouraged and recreational development will not be undertaken.

Northeastern Group

Natural environment zone 4 and natural environment zone 5 are situated along the northeastern margin of the park. They are bounded in the north and east by the park boundary, in the west by the Kaministiquia River and the development zone (i.e., beach-picnicking area and the falls viewing area) and are separated by Highway 11-17.

Natural environment zone 4 will perform two essential functions: the portion of the zone comprising the granitic outcrop will provide an extensive recreational alternative to the intensive opportunity available at the adjacent beach-picnicking area; and the zone will serve as a buffer separating the beach-picnicking area from the railroad, the hydro flumes, the highway and the village to the east and southeast. Natural environment zone 5, situated south of the walkway to Kakabeka Falls between the lip of the gorge and the park's eastern boundary, functions primarily as a visual buffer.

Resource management policies will comply with those as previously stated in the park's goal and objectives. Where recreational use will be encouraged within the zones in this group (i.e., primarily on the granitic outcrop), it will be of the extensive type and will be totally unstructured. Opportunities for casual walking, viewing and sunbathing will be available. No facilities will be provided except primitive pathways and garbage disposal units.

Development Zone

The park's development zone, comprising 105 ha or 25 percent of the park's total area, essentially incorporates the existing pattern of intensive recreational use and development, (Figure 7). It includes the beach-picnicking area, the falls viewing area and adjacent lower campground, the upper campground flatland, the group camping area and the existing access roads.

Resource Management

Resource management within the development zone will be compatible with the park policy as stated in the goal and objectives. In this zone, resource management activities will be primarily oriented towards the maintenance of the integrity of the resource base where subjected to the impacts of use and development (e.g., erosion control, replanting, etc). The objective of maintaining the integrity of the resource base will be a major consideration in the preparation of site plans for the redevelopment of the falls viewing area and the expansion of the upper campground and group camping areas.

The zone's cultural resources, in particular three archaeological sites upon which recreational development has occurred, require specific and immediate attention. Two sites, the Mayer (DcJj-10) and Whitefield (DcJj-8), situated within the upper and lower campgrounds, respectively, will be closed to use and excavated as soon as funds permit. The third site, the Nartisqua-Mert (DcJj-6), situated within the beach-picnicking area and already badly disturbed, will be salvaged as funds permit.

Recreational Opportunities and Development

Primary opportunities provided within the zone will include viewing, interpretation, education, swimming, picnicking, car camping, and group camping. The judicious selection of the site and the design of facilities will be employed as the principal agent in achieving the effective integration of such a diverse and potentially conflicting set of activities. In keeping with this intent, the following discussion considers the development zone as four activity-development nodes, each of which is addressed primarily to a specific user group.

Falls Viewing Area: This node focuses upon the falls and the immediate gorge and is divided by the Kaministiquia River (Figure 23). It was in response to this situation, and, specifically, the "bottleneck effect" created by the main park bridge, that the free day-use policy was developed. The successful implementation of the policy requires the resolution of very fundamental problems of pedestrian and vehicular circulation. As a result, a pedestrian walkway will be developed as an essential unifying element linking the eastern and western viewing areas. The walkway will begin at the eastern viewing area and, paralleling the river's bank, will extend northward to the park bridge, cross the bridge by means of a cantilever deck attached to its southern side and extend south again, parallel to the river bank and gorge, to the former site of the Greenmantle Tower. Central to the concept of the walkway is the integrated design of the walkway itself and its associated overlooks, visitor services displays and protective devices. In the eastern viewing area, the walkway will connect with a walkway to the village of Kakabeka Falls and a trail providing access to viewing opportunities south of the falls along the eastern bank of the gorge and the free parking lot. In the western viewing area, the walkway will connect with the existing parking lots, an interpretive centre, a picnicking area, and a walkway, portage and trail network providing access to the western gorge and the southern sectors of the park.

From the standpoint of vehicular circulation, only minimal redevelopment will be undertaken in the short term to implement the free day-use policy. With the construction of the walkway, the congestion on the bridge, resulting from pedestrian traffic moving between the existing free parking lot and the western viewing area, will be eliminated. To minimize congestion resulting from increased vehicular traffic, an alternating one-way system controlled by traffic lights at each end of the bridge may be installed if necessary. At the time of the construction of the cantilever walkway, the existing surface and railings of the bridge will be upgraded. When the level of traffic surpasses a manageable size and the condition of the structure warrants major improvements, the feasibility of a two-lane bridge, the more desirable but costly alternative, will be evaluated.

With the exception of the walkway, little modification will be made to the eastern viewing area. The free parking lot, its principal development, will be retained but not expanded. The walkway to the village will be completed. The existing trail, which extends south some 200 m providing access to outstanding views of the gorge and the falls, will be upgraded. Also a walkway to the beach-picnicking area will be developed and the problems of erosion and general aesthetics will be improved.

With the implementation of the free day-use policy, the western viewing area will become the focal point of visitor activity within the park. Consequently, a substantial modification of the existing situation will be required. The most important modification will be the development of a visitor services centre immediately south of the existing park facility. Formerly, the western viewing area was the site of the Greenmantle Tower concession, however, a concession will not be included in the redeveloped western viewing area or elsewhere in the park.

A second major potential modification will be to adjust the role of the lower campground area. Should the demands for picnicking opportunities adjacent to the falls viewing area develop as anticipated, a portion of the lower campground area will be operated as a picnicking area. This would be connected to the western viewing area by both the park's road system and a walkway.

Finally, the falls viewing area will remain the site of the park's major administrative facilities. For these, only minor modifications will be undertaken. With the implementation of the free day-use policy, the existing gatehouse will be converted to a visitor orientation centre and will thereby play a major role in the communications component of the visitor services program. In addition, separate access will be provided to the park warehouse, thereby removing the park maintenance traffic from the heart of the park's main parking lot.

Beach-picnicking Area: The beach-picnicking area will be retained in its present form. Due to site constraints and the need for buffering, no expansion will be undertaken. The existing design capacity will be maintained as defined by the parking facility (200 spaces), the

picnic area (approximately 30 tables at 20 sites per hectare) and 270 linear metres of swimming beach. During periods of peak use an entry barrier may be employed to prevent excessive overcrowding of the area's parking facilities.

Car Campground: Car camping opportunities will be provided in the existing upper campground and the adjacent developable lands referred to previously as the upper campground flatland. The site will be developed to capacity utilizing a campsite density standard of 8.5 sites per hectare as the maximum density acceptable in a natural environment park. Utilizing this standard, preliminary site evaluation reveals that a total, ranging between 250-280 campsites, is attainable pending final detailed design work. Of the total number of campsites developed, approximately 30 percent will be offered as pull-through sites and 70 percent as spur-sites. Approximately 30 percent will be serviced with electrical outlets. To add variety to the camping opportunity and to maximize the utilization of the new camping area, a limited number of well-buffered, short distance walk-in sites will be developed.

Due to the relative magnitude of this development its proximity to the park's western boundary, care will be taken to ensure that the existing narrow vegetative buffer is maintained. In addition, a barrier along the park's western boundary will be constructed to minimize the possibility of undersirable traffic crossing this boundary.

In response to potential conflicts between campers and intensive day-users in the western viewing area the increased demands for picnicking opportunities anticipated to occur in this area and the site's poor suitability for camping (i.e., sandwiched between two highways and the river on a slide-hill site), the lower campground will be utilized only when the camping demand exceeds the capacity of the upper campground. A picnicking area will be developed, as required to satisfy the demands of viewers of the falls. The campground entry control station will be sited at the entrance to the upper campground.

Group Camping: Group camping opportunities for both recreational and educational users, will be provided in the southwestern corner of the park on what was formerly the Mayer property. The capacity of the group camping area will be set at two groups of not more than 50 persons each. In addition to the basic tenting and activity area, services and facilities will include picnic tables, fireplaces, water outlets and privies. The emphasis will be placed upon their use by educational groups.

Park Expansion

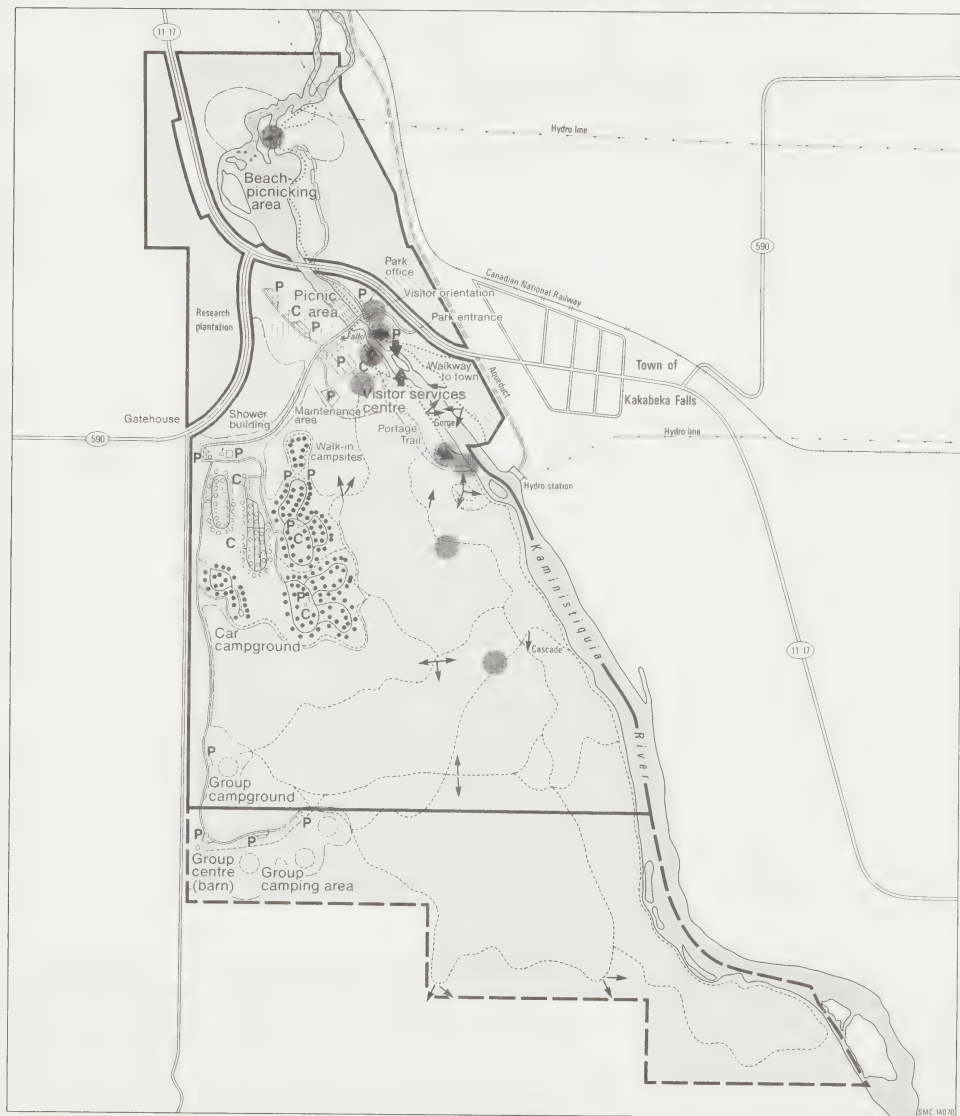
With the approval of this plan, serious consideration will be given to the extension of the park boundary southward to incorporate a minimum of some 150 hectares. Such an expansion would result in important contributions to both the preservation and outdoor recreation objectives of the Ministry's Provincial Park System. With regard to the conservation objective, the proposed expansion area incorporates the interface of the post-glacial Kaministiquia River and glacial Lake Minong, the earliest post-glacial lake stage to occupy the entire Superior basin. These earth science resources, in combination with those already represented within the park, would preserve in Kakabeka Falls Provincial Park an outstanding record of post-glacial events in the western Superior region.

With regard to outdoor recreation, the expansion would achieve two important ends. Firstly, it would expand the nature reserve zone by approximately 140 hectares, thus providing a corresponding increase in this zone's capacity to offer compatible extensive recreational opportunities. Secondly, the expansion would enable the group camping opportunities to improve through the relocation of the existing group camping area.

Figure 24

Proposed Expansion

- | | | |
|----------------------------------|----------------------------------|---------------------------|
| Park boundary | Traffic lights at one-way bridge | Interpretive target point |
| Proposed park expansion boundary | Parking | Nature reserve zone |
| Two-way road | Park building | Natural environment zone |
| One-way road | Comfort station | Historical zone |
| Trail | Vista | Development zone |
| Walkway | Developed lookout | |
| Existing campsites | | |
| New campsites | | |



0 250 500 1000 1500 m



The Park and the Surrounding Area

Although the master plan is essentially limited by the boundaries of the park, it is important that an insular point of view is not adopted and that careful consideration is given to the interactions between the park and the land uses and developments which surround it. Therefore, it is important to consider, however briefly, the potential interactions between the park and its surrounding area. Negative impacts, normally the most tangible and in need of attention, are emphasized in the following discussion.

Because many problems associated with cross-boundary impacts may be solved through internal park action, resolutions are contained in the preceding chapters and will be noted here only by way of example. When implemented, such strategies as the designation of five natural environment zone areas with their primary roles being background landscapes and visual buffers, the development and maintenance of buffering in the area of the falls and that of the upper campground, and the proposed construction of a barrier along the park's western boundary, will represent solutions or partial solutions to problems through internal park action.

Attention is also focused on problems for which an internal solution is not available. The problem of external control of waterflow over Kakabeka Falls, because of its importance to the very essence of the park and the fact that the impact is apparent at a key park target point, is considered at the heart of the master plan. In essence, a position has been established to guide future action with regard to the problem of waterflow.

Recognition need also be given to two additional potential problems, future development which could overlook the park from the eastern side of the Kaministiquia River valley and the proposed relocation of Highway 11-17. The park focuses specifically on the falls, but also generally on the gorge and lower river valley. As demonstrated in previous sections of this document, this outstanding natural landscape has the potential to contribute substantially to both the preservation and outdoor recreational objectives of the park system. Consequently, it is important to maintain the natural character of the gorge and lower valley. To achieve this end, the Ontario Ministry of Natural Resources will request that the Lakehead Official Planning Board provide for adequate buffering through the redesignation from rural to open space of an appropriate land area east of the Kaministiquia River. Furthermore, the Ministry will encourage the Planning Board to ensure that corresponding zoning by-laws are enacted by the Municipality of Paipoonge.

With regard to the relocation of Highway 11-17, one alternative currently under consideration has the re-aligned highway crossing the Kaministiquia River and paralleling the park's southern boundary. If such were to occur, the park expansion as previously proposed

would not be possible. In addition, if developed as proposed, significant shifts could occur in the level of demand, the composition of park users and the patterns of use. Other alternative alignments which swing north of the park might have equally dramatic impacts. Therefore, the Ontario Ministry of Natural Resources will continue to demonstrate to the Ontario Ministry of Transportation and Communications both the positive and negative impacts of the various alternatives considered in the planning stages prior to the selection of a final highway alignment.

On the positive side, there are many opportunities which exist to stimulate desirable interaction between the park and the surrounding area. In fact, this is the essential function of the park. In a somewhat narrower sense, however, it is useful to consider linkages between the park and nearby recreational nodes and population centres. An obvious and existing linkage is provided by the existing road system. This system will continue to service the majority of park users. The village walkway, when completed, will provide a pedestrian linkage with the adjacent community of Kakabeka Falls, indicative of the intimate association of the park and village. In addition, there are other opportunities which would serve to increase the depth and variety of recreational opportunities. The promotion of the use of the Kaministiquia River route, beginning at Mountain Portage (when water levels permit) and terminating at Old Fort William, would enhance historical interpretation both at the park and at the fort. Another viable development might be a bicycle path linking Thunder Bay to the park. Potentially, a trail paralleling the Kaministiquia River could utilize an existing abandoned railway bed which remains visible along much of the route.

Implementation Guidelines for the Development Program

The development program is contingent upon adequate initial program development and site and facility design. Therefore, subsequent to the approval of this master plan, but prior to the initiation of major development activity, visitor services program planning and site development planning will be completed.

Recognizing the essential role to be played by the visitor services program in the achievement of the park goal, the interrelationship of the visitor services programming and the site design processes will be emphasized. This will be achieved through the continuation of the team approach as employed within the master planning exercise (i.e., master planner, environmental and cultural resource specialists, visitor services planner, site planner, district park supervisor and park superintendent). However, at each successive level of planning, the team member most directly involved with the specific planning problem will assume the leadership role.

Visitor Services Program Plan

The visitor services program plan, a preliminary draft of which was prepared in conjunction with this master planning process, will be finalized subsequent to the approval of this document. Deriving its direction from the approved master plan, the visitor services program will outline the manner in which park themes will be presented to park users at defined target points.

Site Plans

Subsequent to the approval of the visitor services program plan, individual site plans will be prepared for specific development units within the park defined on a priority basis. To achieve an orderly progression of planning through site design and ultimately to development, site planning projects will be scheduled to be completed a minimum of one fiscal year prior to the initiation of development.

Upper Campground Expansion

A site plan will be prepared to guide the expansion of the upper campground in accordance with the guidelines as set out in the Park Policy and Park Zoning (pg. 76). Considering the urgency of the need for this expansion and the need for the physical and functional separation of this facility from the remaining park activity areas and facilities, the site planning and development exercise need not be contingent upon the completion of the visitor services plan.

Falls Viewing Area

The site plan for this activity area, the most crucial and complex of all, will focus on visitor circulation and the provision of viewpoints and visitor services target points in the immediate vicinity of the falls. The siting of the visitor service centre in this area will be coordinated with the delineation of a network of trails extending from the western falls viewing area along the western side of the existing gorge to the western gorge overlook. Site planning in this area will also involve the redevelopment of Mountain Portage, the development of a trail and viewpoint system along the eastern side of the existing gorge, including a walkway connecting the village of Kakabeka Falls and the conversion of the lower campground to a day-use picnicking area. Specific guidelines for this redevelopment plan are outlined elsewhere in the plan.

Trails Network

This site plan will delineate the trails network within the southern sector of the park and will focus on the siting and design of viewpoints, visitor services target points and associated displays to which the trails will provide access. A team composed of a site development specialist as well as an interpretive specialist will be established to undertake this project.

Proposed Expansion

Should expansion occur, two additional site plans would be required. Firstly, a site plan would be required to guide the redevelopment and expansion of the group camping opportunities. This plan would consider access, the group sites and facilities, and the establishment of a group activity centre. Secondly, a separate site plan for the development of additional trails would be required to ensure that the new hiking opportunities are integrated with the trails network to be developed within the established boundaries of the park.

Architectural Theme

Within Kakabeka Falls Provincial Park, the opportunity to implement an architectural theme which relates specifically to the park's goal and interpretive orientation, is substantially constrained by the existing facility infrastructure. Within the limitations imposed by this constraint, new facilities will reflect, in their design, the emphasis which this master plan places upon the park's natural and cultural resources. This emphasis is particularly important in the context of the proposed visitor services centre. The architecture of this facility, as a major focal point within the park, is an important vehicle for conveying the park concept to the user.

In addition, since the designs of existing facilities cannot reasonably be altered and since these designs are compatible with the provincial park concept in general, the architecture of new facilities

will be designed so as to complement existing facilities, particularly within individual development area. This consideration is essential if a consistent treatment of architecture style is to be achieved throughout the park.

Park Development Program

The park development program, set out in four distinct phases, contains five major development projects: upper campground expansion, falls' viewing area redevelopment, visitor services facilities, hiking trail system and group camping area (Table 16). Each development project has been divided into several components which will be completed sequentially thus ensuring the orderly progression from planning through development and, ultimately, to program or facility operation. Also, individual components of various major development projects have been combined within each of the four phases of the overall development program. Thus, the implementation of the entire program is integrated vertically or sequentially through time and horizontally among its major component projects.

Ideally, the development program as outlined in Table 16 should be adhered to without deviation. However, recognizing the effect of funding constraints combined with regional and provincial priorities, some deviation from this ideal is inevitable. Where unavoidable adjustments must be made, major development components within a given phase of the program will be implemented in tact. Also, the phased progression of components within a major development project will be retained.

Because of its importance to the essence of this master plan, the phased implementation of the upper campground expansion and the falls viewing area redevelopment has been extracted from Table 16 and outlined separately within Table 17.

Park Capacities

Table 18 outlines the instantaneous and daily capacities that will be attained by the park's recreational facility infrastructure with the full implementation of the park development program. Calculations yielding instantaneous capacities were based on space standards applied to development areas and/or an average party size factor applied to the number of existing or potential units within a given development area. Daily capacities were derived by applying a user turnover factor to the instantaneous capacity.

Because of their somewhat arbitrary derivation resulting from the use of space standards and averages, the above capacities should not be applied inflexibly. Instead, refined site specific capacities will be developed through the detailed site analysis and design process. Furthermore, once facilities are in operation, ongoing monitoring by management staff will provide a basis for the further refinement of the capacities. However, despite the inherent

Table 16: Development Program Phasing

Phase I

- Visitor Services
 - Completion of draft program plan
- Upper Campground Extension
 - Completion of site plan
- Park Expansion
 - Acquisition of properties

Phase II

- Upper Campground Expansion
 - Initiation of development
- Visitor Services
 - Program development
- Falls Viewing Area
 - Gorge wall stability assessment
 - Completion of site design
- Hiking Trail System
 - Layout and design
- Group Camping Area
 - Completion of site design
 - Rehabilitation of existing area

Phase III

- Upper Campground Expansion
 - Completion of development
- Visitor Services
 - Program development
 - Architectural design of visitor services centre.
- Falls Viewing Area Redevelopment
 - Bridge upgrading
 - Walkway system
 - Lower campground conversion
- Hiking Trail System
 - Development of trails, viewpoints, etc.

Phase IV

- Free Day-use Policy
 - Implementation
- Visitor Services
 - Construction of visitor services centre
- Group Camping
 - Construction of access
 - Development of area
- Hiking System
 - Expansion

Table 17: Phasing for Upper Campground Expansion and Falls Viewing Area Redevelopment

Phase I

Open upper campground expansion (170 sites).
Close lower campground area (70 sites) to camping,
(except for periods when peak use exceeds the
capacity of upper campground)

Phase II

Open falls viewing area walkway and viewing system.
Implement free day-use policy.
Allow day-use (picnicking) in lower campground area.
Assess extent of day-user demand on lower campground area.

Phase III

Open visitor services centre.
Continue to allow day-use in lower campground area.
Continue to assess extent of day-user demand on lower
campground area.

Phase IV

Assess role of lower campground area with regard to day-use
and camping*.

* It is emphasized that, in accordance with this master plan, the primary role of Kakabeka Falls Provincial Park will be to provide a quality viewing-interpretive-educational opportunity. Therefore, camping opportunities will continue to be supplied in the lower campground area only to the extent that the primary falls' viewing opportunity is not compromised.

Table 18: Park Capacities By Activity Unit

<u>Day-use</u>	<u>Instantaneous</u>	<u>Daily</u>
Falls' viewing area	1,150	8,050
Western picnic area	150	300
Eastern picnic area	65	130
Beach-picnicking area	800	1,600
Hiking trail system	60	120
<u>Overnight Use</u>		
Car campground	1,100*	1,100
Group campground	100	100

Total Capacity	3,425	11,400

<u>Winter Use**</u>		
Winter trail system	60	120

* Full closure of the lower campground would result in a car campground capacity of 850. This capacity is approximately 325 in excess of the 1976 capacity of 530.

** Winter use capacities are only calculated for trails activities (specifically cross-country skiing and snowshoeing). For the foreseeable future, use levels associated with all other potential activities (i.e., viewing, interpretation, winter camping) is expected to fall short of the total capacity.

limitations of the preliminary capacities contained in this document, they can still provide a useful guideline to subsequent and more detailed levels of planning.

Implementation Guidelines for Management Planning

In addition to the visitor services program plan and the facility and site development plan discussed previously, a management plan will be prepared to guide the day to day operation of the park. This plan will comply with the format specified in the Park Management/Operating Plan (Ministry of Natural Resources, 1976) which is currently being applied across the province. In accordance with this format, the plan will provide detailed staffing and scheduling guidelines for personnel, safety, financial management, park maintenance, facility operations, law enforcement and security, visitor services and resource management. Recognizing the particular requirements of Kakabeka Falls Provincial Park, the plan will emphasize visitor services, maintenance and facility operation.

Staffing

Park staffing requirements and reporting relationships are outlined in Figure 25 and Table 19. When fully staffed, the park will be operating with four full-time staff members supplemented by 29 seasonal staff members. Because of the high degree of dependency on seasonal staff, the four full-time positions are crucial to the effective operation of the park. The park superintendent and visitor services programmer positions are particularly important given the dramatic re-orientation of the park's programs. However, the importance of the assistant superintendent and maintenance foreman positions cannot be underplayed given the high volume of park visitors. The quality of a visitor's experience is substantially dependent upon the quality of the park's maintenance and operating program.

Monitoring

An essential but traditionally neglected phase of the planning process is feedback. This phase provides basic information on the success with which the policies of the plan are being implemented, as well as information on the effectiveness of those policies. Effective feedback is achieved through monitoring user activities and opinions as well as monitoring park management programs. As a result, the monitoring provides the required sound basis for necessary adjustments to programs, site and facility designs, specific policies and even the overriding goal and objectives. Such feedback will form an essential input to the mandatory five-year review of this document.

A variety of mechanisms, many of which are currently being applied, are available to monitor both user activity and park management programs within Kakabeka Falls Provincial Park. With regard to user activity, annually collected user statistics provide basic information relating to park visitation. To supplement this comprehensive but non-qualitative

Figure 25: Organization Chart

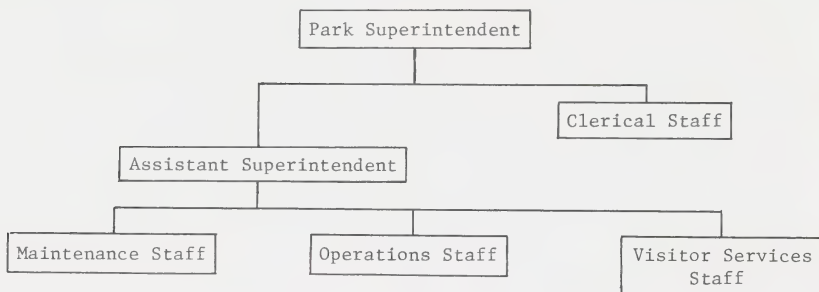


Table 19: Staffing Requirements

	<u>Full Time</u>	<u>Seasonal</u>
<u>Administration</u>		
Park Superintendent	1	
Assistant Superintendent	1	
Park Clerk		1
<u>Maintenance and Operations</u>		
Maintenance Foreman	1	
Comfort Station Maintenance		4
Water Quality Control		1
Campsite Maintenance		3
Handymen		2
Gate Staff		
Head Gateman		1
Information Centre Staff		3
Campground Gatemen		5
Security Staff		4
Lifeguards		2
<u>Visitor Services</u>		
Programmer	1	
Support Staff	-	<u>3</u>

data base, a park visitor comment sheet will be implemented to record both positive and negative visitor reactions to the park, its facilities and programs.

In addition to the above, a series of special surveys are warranted, in recognition of the dramatic re-orientation of user activities as encouraged by this master plan. With the completion of the redevelopment of the falls viewing area, the construction of the interpretive centre and the development of the trails network throughout the park's southern sector, the camper and day-user components of the park user surveys previously undertaken in Kakabeka Falls in 1974 and 1975, respectively, will be reapplied. Resultant data will provide an invaluable basis for the assessment of this master plan.

Additional special surveys focusing on specific user groups may also be required. The implementation of a visitor services program will represent a dramatic increase in opportunities provided within the park and consequently, a major shift in user activity patterns. Therefore, to test the success of the developing program, special surveys of the users may be required. However, these special surveys will only be applied if important questions remain unanswered subsequent to a careful analysis of the aforementioned standard user data.

Also in the realm of visitor services information, visitation statistics for the educational users will provide, on the basis of participation, a general indication of the success of the outdoor education program. To supplement this information, individual responses of teachers and students participating in the program will be requested annually.

The detailed monitoring of vehicular circulation patterns in the entry and falls viewing areas will be undertaken through special surveys until the full implementation of the free day-use policy is successfully achieved. It is largely in response to problems posed by existing circulation patterns that the free day-use policy was proposed. Considering the potential complexity of future vehicular circulation problems and related uses that will follow the implementation of the free day-use policy, detailed data on traffic circulation will provide an essential basis for developing a design and implementation strategy and, ultimately, testing the final circulation system once implemented.

With regard to park management and plan implementation, two specific monitoring devices are important and are currently in operation. First, regional and district audits monitor general park management as well as park interpretation. Secondly, the budgeting format developed through the 1974 and 1975 provincial park cost studies facilitates the monitoring of expenditures within the park, particularly in relation to other parks. The information in the budget when compared to the indication of quality provided by the audit system will provide a very concise indication of the effectiveness of the park management program.

Master Plan Review

In accordance with established Ministry policy, this plan will be reviewed and updated at regular five-year intervals and will be completed as funds and priorities permit.

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Master Plans





Ministry of
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Resources

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March, 1978

